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Published by THE TIMES NEWSPAPERS LTD, 1, Abchurch Lane, London EC4N 3DF. P.O. Box 7, 200, Gray's Inn Road, London WC1X 8EH. England. Telephone 01-253 3000. Telex 941400. Cable 20000. Second class postage paid at New York, N.Y. and at additional mailing offices. Postmaster: send address changes in U.S.A. and possessions to THE TIMES, c/o World Mail, Inc., 225 West 57th Street, New York, N.Y. 10019.



HIGHER EDUCATION SUPPLEMENT
Priory House, St John's Lane, London EC1M 4BX. Telephone 01-253 3000

The Peterhouse effect

The phrase, of course, is unfair. But despite or perhaps because of this it is almost irresistibly seductive. For Peterhouse has become something of a symbol of the radical right in English intellectual life, largely no doubt as a result of the teaching and writing of Maurice Cowling and Edward Norman. Radical is perhaps an inaccurate adjective to apply to the former whose purpose has been to sustain a lively tradition of Toryism, although hardly of the Pym-Prior school. Dr Norman with a more combative temperament would probably have fewer objections to the adjective "radical". But both have maintained a serious and not unattractive assault on the chilly Whig core of British public life. So the Peterhouse effect may be rather more than a catchy phrase; it may represent a small but colourful part of a great reversal of national preoccupations which have remained essentially unchanged since 1945 (or 1906, or even 1832?).

The chilly Whig core is still in its accustomed place of course. Anyone who has any doubt about this has only to listen to the current series of Reith lectures by Sir Douglas Warr, former permanent secretary at the Treasury. Whatever prospect there may be for a revolution in intellectual life, in public life the old Whig gods are still respected. Material and moral progress going hand in hand; reform without threat to a fundamental social order; a pragmatic belief in the benevolence of the state despite the objections of liberal ideology. All three ideas are as vigorous as ever.

They are as vigorous as ever at any time in terms of their grip on British institutions. In Sir Douglas's Reith lectures it is possible to identify a continuity of tone that goes back to the beginnings of the modern bureaucratic state in the half century after 1832 and especially in the 1850s and 1860s. It is almost not too fanciful to imagine Trevelyan saying similar things to Sir Douglas, not in detail of course but in the underlying assumption about the rational organization of society. If there had been Reith lectures 130 years ago. This continuity is hardly surprising. W. H. Greenleaf in his *The British Political Tradition* published earlier this year explains very well the institutional and ideological momentum behind what can be conveniently but crudely called conservatism. The result is that these ruling Whig values are not so much embodied in abstract ideas but entrenched in the mundane habits of powerful institutions. That is a source both of great

strength and of potential vulnerability. Inertia is a state of great power, but power that is entirely negative. It is difficult to suspect at times that the positive power of these entrenched institutional values is draining away. For in their first 70 years of supremacy these Whig values were the product of an unassailable alliance between morality and rationality. Nonconformity (and both its more established and secular variants) and positivism (and more moderate extensions of the scientific tradition) came together to produce a common programme for society.

In their second 70 years of supremacy these Whig values lost the active support of morality, mainly because of the secular decline of the great institutions of morality like nonconformity but also because of growing cultural pessimism under the shocks of the twentieth century. This was replaced by a much more feeble ethical predisposition to support whatever was currently defined as social progress. Whig values retained the active support of rationality for much longer. Only in the last 10 years has it become almost possible to argue that conservative values are as good a guide to the rational organization of modern society.

However at a much earlier period Whig values had begun to lose the crucial support of progressive intellectuals. The latter went whoring after Marxism and adopted an essentially critical and hostile attitude to the society of which they had once been natural defenders. Subsequently Conservatism, which from Joseph Chamberlain to Harold Macmillan had been a simple and attractive form of Whiggery, was reinvigorated by unambiguously conservative values that broke through the political surface after a century's suppression - which perhaps is where the Peterhouse effect comes into the argument.

So under the chaos of misleading labels that litter British public and intellectual life in the 1980s two remarkable paradoxes can be glimpsed. The first is that the liberal Left has been deserted by its intellectual supporters, who have abandoned public duty for ideological purity in a way that would have shocked their Victorian predecessors, while the conservative Right has regained a large body of intellectual support after so many years of being labelled philistine and reactionary. The enthusiasm for the Social Democratic Party in universities should not, conceal the intellectual vacuum on the centre-left.

The second is that, despite five years of Mrs Thatcher, British public life is still entirely dominated by the Whig values of the centre-left. The gains of radical Conservatism have in practice been slight. Ground has been given up but no important principles have been conceded. British intellectual life in contrast seems to be increasingly polarized between irresponsible multifariousness on the left and a rapidly reviving Conservative tradition - and the latter sometimes seems to have the better lines. In other words how modern Britain actually works, and the pragmatic values that underpin that detailed operation, are denied effective intellectual support. The thinking classes, to adopt a favourite phrase in *The Times*, are indifferent or hostile - good news in Peterhouse perhaps but bad news for Whitehall.

If this argument is even half accurate it has disturbing implications for public administration. To take an example close to home, the debate which Sir Peter Swinnerton-Dyer hopes to stimulate about the future of higher education. The obstacles to such a debate are already considerable, the tyranny of experts which keeps the less expert at bay, the increasing sectionalization of national affairs into water-tight compartments, the diversity of values represented in a modern system of higher education, pervasive anti-intellectualism in lay society.

But a larger obstacle could be the lack of symmetry between the administrative values and practices which still guide the performance of Britain's public life and the intellectual values which seem to excite or annoy us in Britain in the 1980s. There really is very little interesting that can be said about higher education from either a quasi-Marxist or neo-conservative point of view. The debate can only take place in the context of Whiggish values. Yet these values have gone stone cold.

More generally a reasonable symmetry between the institutions and ideas of society is the basis not only of the high public culture that the Victorians enjoyed (imagine Matthew Arnold or John Stuart Mill on the UGC's 28 questions) but also of our ability to reform institutions and to adapt ideas to human and practical use. Otherwise institutions become inert and ideas volatile playthings. It would be of course unfair to label the Peterhouse effect - as it would be to label the former the Whig syndrome. But there is perhaps just enough truth in both to justify such unfair use.

Save the ILEA

"Act in haste; repent at leisure" already seems to be the surreptitious majority verdict on the Prime Minister's pre-election promise to abolish the metropolitan county councils including the Greater London Council and the Inner London Education Authority in its present form. Not that it is Mrs Thatcher who will do the repenting; rather it will be the civil servants who have to draft the legislation to unmake local government reorganization, the local authority officers who will have to try to maintain normal services against a destabilizing background of political interference and of course all the rest of us who depend on, use and appreciate good local services.

The intentions of the Government, outlined in the Orwellianly titled White Paper *Streamlining the Cities* and compounded by Whitehall's new power to limit rates, are objectionable from every point of view. The abolition of the metropolitan counties will lead to a re-creation of the distinction between shire counties and county boroughs (in the shape of the metropolitan districts). In one of the most urbanized nations of the western world there will be no unitary city authorities. In the case of London the proposals will have an especially reactionary effect. The abolition of the GLC will re-create the chaotic conditions of mid-Victorian London with its

confusion of ad hoc and single-purpose quangos. The Government's new power to control rates will have results that are as objectionable. For a start it is almost certainly unnecessary even in terms of the Government's own desire to limit public expenditure. The record shows that local government is a careful spender, while central government itself is the profligate. It will clearly curtail the sensitivity of local services because Whitehall will take decisions by common formula and computer data base.

Both strands of the Government's attack on local government come together to bear particularly oppressively on the ILEA. On Tuesday a special meeting of the authority's education committee passed a motion rejecting the Government's plans for its future that had been proposed jointly by the Labour majority leader, and the Tory Social Democratic Party member of the LEA. Before their united front is dismantled, as another example of the "hurdle" or "seal" syndrome, careful attention should be paid to the education officer's report which was the subject of the motion. In J. Mr. William Stubbs quietly but entirely demolished the Government's case. The danger is that the

Department of Education and Science will not bother to listen to these arguments or consult properly about the details - because it knows that although it has no real case in the first place "the" has already made up her mind. The White Paper itself does up her try to argue the case against a unitary authority for Inner London. The ILEA has retained the surprisingly partisan support of most London parents under most difficult conditions. It has extensive responsibilities for further and higher education, including five polytechnics, which make it particularly unsuitable for direction by a quango composed of borough councillors with inevitably parochial concerns.

The traditional arrangements proposed in the White Paper are a special case. In effect they give the DES the power to fix not only the budget but staffing levels for the inner London education service. Not even the best friend of the DES could imagine that it was remotely competent to do this. Even the Department of Health and Social Security, which has almost 30 years of experience of direct management responsibility for the health service, has made a fool of itself trying to fix staffing levels for regions and districts in the NHS.

The Government should accept that by a reasonable standard the ILEA is a special case and should be left alone.

Laurie Taylor



Good. So that seems to be agreed. We'll all write as individuals to the UGC about the restructuring of the universities, except over the issue of extra car parking space for senior lecturers, where we'll express a departmental view. Now, item six, *Results of the Survey Carried out by the Departmental Word Processor Subcommittee*. Yes, Doctor Wernitz, this, I believe, is very much your pigeon. Yes, thank you, Professor Lapping, I presume that I hardly need to remind anyone, that this is the survey upon which it was agreed, after somewhat protracted, even heated, but always well-informed discussion, that we should base our departmental decision about the purchase of this particular piece of advanced technology. In this era of rapidly changing...

Do get a move on Doctor Wernitz. There are still nearly eight items of non-student business to be covered. I think we can take all that business about "moving with the times" for granted. I'm sorry, Professor Lapping. May I then move immediately to the first part of the survey - and here, as elsewhere, may I acknowledge the methodological help we received throughout the course of our work from Doctor Cornick. Here, however, from Doctor Cornick.

Now, in this first section we concentrated upon the possible benefits for staff which might lie in the correcting and display facilities of the processor. As I remember, you specifically asked for academic articles which might be improved before publication by these means. Exactly. Unfortunately only one article was submitted to the committee - from Doctor Piercemiller - and we were unable to see how this might benefit from the relatively modest technology we were considering. Might we know the precise problem? It was mainly a question of very poor spelling.

Ah. We then turned to the issue of updating book lists - and this, the capacity of the machine for storing book lists in a manner which allows for alphabetical ordering of entries in a file at any time. However, our findings indicate that most book lists in our department have not undergone revision in the last ten years, and furthermore 82 per cent of those departmental members who responded were of the opinion that "nothing worth reading" had been produced in their subject area during that period. Pretty conclusive.

Yes, indeed. Then we turned to student records, concentrating here on the machine's ability to provide detailed information on a student's academic record, background qualifications and tutorial progress during the course. But here again, there was little positive benefit perceived, with 92 per cent of the departmental members ticking the statement: "I know far too much about the students already, thank you very much."

So the balance of opinion was running pretty strongly against purchase, Doctor Wernitz? Quite so, Professor Lapping. But I'm pleased to say that the situation was quite reversed when we came to the final question. And here, as you will see from the summary in front of you, there was complete agreement. Excellent. So may we now minute this decision. "It was agreed that we should now proceed with the purchase of a Departmental Word Processor on the grounds that..." Could I have the grounds here, Doctor Wernitz? "On the grounds that..." "That the Politics Department has got a new secretary."

Thank you. That will do splendidly. Now on to item seven, *procedure to be followed when staff are seeking assessment essays*. Who'd like to start us off on this one?

The Times Higher Education Supplement

December 10, 1983 No 580 Price 50p

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UGC forges ahead with closures

by Olga Wojtas and Jon Turney

The University Grants Committee is pressing ahead with piecemeal rationalization, including departmental closures, despite its commitment to a great debate without preconditions on the future of the universities.

Heriot Watt University has been told to close its department of pharmacy and the UGC physical sciences committee is embarking on drastic restructuring of oceanography. This is the first time since the July 1981 letter that the UGC has given universities detailed advice to close departments. It suggests that although no full-scale rationalization on the 1981 pattern will be contemplated by the UGC before its great debate is completed the committee has by no means abandoned rationalization by stealth.

The UGC has said an intake of 60 students is the minimum satisfactory size for a pharmacy school, and that Heriot Watt takes in only 45 students annually, making it the smallest university school. This has angered Heriot Watt, which was the only university to respond to a call from the Pharmaceutical Society of Great Britain for a halt to the massive expansion of pharmacy schools during the 1970s.

Heriot Watt was also told by the UGC in 1981 to make a substantial cut in its pharmacy intake. "Because we had already put our finger in the eye, we were cut from a much lower base", says Heriot Watt principal, Dr Tom Johnston.

The UGC move follows a review by the Pharmaceutical Society recommending a 10 per cent reduction in the annual output of 3,600 pharmacy graduates. Heriot Watt has not yet seen the report, but Dr Johnston said its pharmacy students had a consistent 100 per cent success rate in finding jobs.

He added that the report seemed to be a national manpower assessment, and did not consider regional needs. There are only three pharmacy schools in Scotland: at Heriot Watt and Strathclyde Universities, and Robert Gordon's Institute of Technology in Aberdeen.

Dr Johnston is seeking an urgent meeting with the UGC next month to put the university's firm opposition to closure. Meanwhile the university, which has already successfully fought the UGC over the closure of its Russian department, is ostentatiously recruiting for next year's pharmacy intake. The UGC considers that staffing requirements for training pharmacists "could be met by other pharmacy schools in the universities and the public sector and that the continuation of the Heriot-Watt school was not necessary on these grounds".

British oceanographers will spend Christmas wondering where they have to work next year. The UGC and the Natural Environment Research Council are both planning to restructure academic oceanography. At least one university department and two sites of the NERC's Institute of Oceanographic Sciences are at risk.

The UGC physical sciences committee decided earlier this month to send a visiting group to all four university oceanography departments to help decide how to reduce them to two larger units.

The committee believes oceanography is an expensive subject which would be better served by two well-established departments. Of the four existing departments - at Swansea, Bangor, Southampton and Liverpool - Swansea looks most at risk, but none of the others wishes to move.

Bangor and Southampton have already discussed a possible merger in detail, but reached no agreement on the best plan. It is now up to the UGC to decide who should go where. At Swansea, the appointment of a new professor of oceanography has been frozen on instructions from the committee.

At the same time the Natural Environment Research Council will be reviewing all four sites of the Institute of Oceanographic Sciences, at Humberston and Wormley in Surrey, Taunton in Somerset, and Bidston on Merseyside. A council meeting on December 1 considered proposals from the director of the institute, Dr Tony Laughton, to relocate the Taunton and Merseyside units at the central Surrey site.

This followed invitations to Dr Laughton and the director of the Institute for Terrestrial Ecology to make such plans from the chairman of the NERC, Sir Hermann Bondi. Dr Laughton explained that new plans were needed both to save money and to meet increasing pressure from the Advisory Board for the Research Councils to reduce the number of institute sites.

Ethical codes are more common in the United States than here although some exist, for example the professional code of the Market Research Society which has been invoked against members.

The ISI-SRA code aims to avoid the traditional pitfalls of ethical codes that are either "aspirational", with goals that are almost unachievable, or "regulatory", with rules that are very undemanding.

Dr Roger Jowell, co-director of the Social and Community Planning Research at the City University, who has played a key role in producing the code, said the aim was to be realistic. Pressure on researchers will be by peer review," he said. "It is not to set up tribunals that cannot enforce sanctions."

Each principle in the 14-page code is followed by comments on likely conflicts. Thus researchers "must respect the right of subjects not to take part in surveys, even if they need more material to make the survey statistically valid."

Or researchers must respect rules of confidentiality even if it would be cheaper to re-use data for different purposes, or again researchers must strive for accuracy and avoid bias as far as possible within the terms of their contract and current value-systems.

Ms Denise Livesley, also at City, who headed the SRA ethics committee, said the aim was to provide a realistic framework within which researchers would make ethical decisions. "We will also be able to debate practices we feel unhappy about in public."

Two new concepts in the code require researchers to respect behaviour intended to be private even if it is done in public, and to avoid contractual restrictions that may force them to break ethical principles.

chief officers and representatives of the Committee of Vice Chancellors and Principals and the Business and Technician Education Council, NAB expressed its interest in quinquennial visits to institutions and CNAA chief officer Dr Edwin Kerr agreed that joint visits may be possible.

Strong opposition to these closer ties was expected at the CNAA meeting from the institutional representatives on the council.

But council members from universities and outside the education system were expected to support the officers' proposals.

The final NAB committee allocations to polytechnics and colleges of 1984/85, still awaiting the opinion of Sir Keith Joseph, Secretary of State for Education brought some relief to major institutions this week. Owing to the extra £20m in the advanced further education pool and the decision to allocate money on different bases to different types of institution, all the polytechnics do better, than they expected.

Only three polytechnics will receive less funding than they had this year: Portsmouth, Central London and North East London, whose director Mr Gerry Fowler pointed out that although the cut of over £800,000 was better than previous NAB figures it still rose well above £1m once inflation - ignored by NAB - had been taken into account.

A full table of polytechnic and major college allocations is on Page 4.

The future of the National Engineering Scholarship scheme, wavering because of lack of industrial support, has been secured by an increase in Government backing.

The Department of Education and Science has agreed to pay 70 per cent of the cost of the scheme, which will now be administered by the Engineering Council.

The scholarship was in danger of becoming an annual alibi, with the DES repeatedly seeking Treasury approval to bail out the scheme when

industrial contributions fell short of the expected 30 per cent share. The awards were set up in 1978 to give £500 a year to 500 outstanding engineering undergraduates, to encourage bright youngsters to take up engineering.

By 1981 so many companies refused to contribute that the Treasury had to put in an extra £10,000 to maintain numbers. The 1982 intake was cut to 300 and there was still a shortfall on the industrial side.

A special appeal launched by the Engineering Employers' Federation only raised £19,000 out of the £100,000 needed and the new scholarship intake had to be cut to 100.

The DES, with the Engineering Council's encouragement, has now accepted that there is no immediate prospect of industrial backing being restored but ministers still believe that the scheme is worthwhile.

The DES now has Treasury approval to put in 70 per cent of the cost and raise the number of entrants to 300 again. This puts the total cost up to £450,000 a year after three years.

The DES announcement, expected in the next few weeks, will stress that the new scheme is not indefinite. Officially it is anticipated the industrial contribution will rise again in the long term.

Dr Kenneth Miller, the director general of the Engineering Council, said: "The real advantage of the scheme is not that it brings more students into engineering directly, but that it makes the subject more attractive in schools."

First year students on Thames Polytechnic's doomed primary REO course and children from Deftford primary schools work together at the ILEA Environment Studies Centre at Horton Kirby, near Dartford, Kent.

The degree is taking its last year, the 1982 intake was cut to close it by the secretary of state for education. Ironically it has just been awarded the Royal Society of Arts Education for Capability Award.

The scheme was created to encourage courses designed to develop students' and pupils' competence, their ability to cope better with their lives, their creative abilities, and their ability to cooperate.

Flowers' step to protect ministers

Ministers have been asked to warn vice chancellors if they intend to visit universities privately in a bid to influence protection from campus violence.

The suggestion came from Lord Francis, chairman of the Committee of Vice Chancellors and Principals.

Francis was raised by Sir Keith Joseph, Secretary of State for Education, during this week.

The University of Warwick is standing up to the suggestion to fine the students £20,000.

Government agrees to fund engineering scholarships

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Letters to the editor

Improvers at work without illusions

Sir, - "Your use of the term 'Whig' (leader, December 9) makes as much sense as Mrs Thatcher's or any other politician's use of 'fascist'. On almost any definition Whiggery would have to include that old reactionary, Melbourne, and exclude the radical, Mill. Just to point up your confusion, let us remember that Mrs Thatcher is a disciple of Hayek and Hayek is a disciple of Mill. May I suggest that if you want portmanteau words, you might use 'improvers' and 'economizers'. Then you might go on to assert plausibly enough that the improvers are still in the saddle.

Apart from your defective nomenclature you do well to maintain that the

consensus is alive and kicking in spite of the assertions of politicians, journalists and some wild political scientists to the contrary. In 1979 95 per cent of schools education and 98 per cent of medicine were located in the public sector. They still are.

Ailing nationalized industries have continued to crucify the present government as they did its Labour predecessor. The amount of economic activity that has been transferred to the private sector is a small proportion of the whole. The National Health Service is funded at 117 per cent of the 1979 level and in spite of cuts educational institutions have continued to perform the essential func-

tions.

In 1979 after the winter of discontent it was widely felt that things could not be allowed to go on as they had done: there had to be some legal, institutional and economic changes. The Labour Party was identified with a large part of the malaise and punished accordingly. This sentence was increased by the electorate in 1983 and a new consensus was confirmed, an anti-collectivist consensus. The mistake made by those who assert the end of consensus is to assume that history is linear. It is not such thing; it changes its dimensions all the time.

When we look at the international context we see the United States with a

huge, unsustainable fiscal deficit and Sweden, the mecca of welfare, in like case. We see Holland with more unemployment than our own and we see a socialist French government recanting and promoting the virtues of the Bourgeois.

In these circumstances it is pointless to try to extrapolate a dead Keynesian system. The improvers are still at work. The difference is that they have shed their illusions.

Yours sincerely,
KENNETH BURGIN
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Whitehall Road,
Woodford Green,
Essex.

Designs on preservation of excellence

In most sectors of advanced further education, including much of the art and design area, there is an almost audible sigh of relief now that the outline of the NAB's recommendations for 1984/85 are evident. Of course there are problems but wholesale butchery appears unlikely. But there should be no rejoicing many of the points made to the NAB in a NSAE statement earlier this year will become even more pertinent when the effects of inflation and further restraints on the rate support grant become manifest in 1985/86 and beyond. Even now it is increasingly evident that if the initial proposals are accepted, art and design provision in the south east of England will be faced with large scale restructuring that will have results that are at least questionable for the balance of the national provision.

The NSAE is inevitably concerned about the apparent inequitable distribution of resources between the public sector and the universities. This is a matter of great concern in the art and design field because by the greater part of the overall provision lies in the maintained sector. Furthermore art and design provision is comparatively small in national terms and there must be some concern that as a result of these factors the subject may face disproportionate cuts. The NSAE will need to cut in the art and design area of AFS which exceed the national average 1984/85, until such time that there has been a major review which we believe might ultimately demonstrate the need for an expansion of many areas within the subject provision.

The society agrees that education in this country must continue to be aimed at meeting the needs of industry and commerce, but surely the needs of the wider community and of individuals are also vital to the future of this country? We believe that art, craft and design will continue to have a major role to play in a society which is changing rapidly and in which trends are not always easy to discern. It is certain that the training of good designers could help the economy of the nation by enabling manufacturing industry to establish new markets.

The colleges have a proven record of excellence in developing new commercial and industrial enterprises and if anyone doubts the quality of the product they should be convinced by the exhibition "Young Blood" currently on show at the Barbican Centre, London. But there is more to it than this; the long term value of art and design education at all levels must be stressed for the contribution of the subject can make to standards of critical awareness of design and the environment that affect all our lives - an essential part of the cultural fabric of society.

The "Young Blood" exhibition clearly demonstrates that art, craft and design education is concerned with levels of understanding, processes and skills where the discipline required to work effectively is at least as rigorous as in the most established part of the subject. It is a long established part of the society's philosophy that elements ranging from fine art to industrial design form part of one training.

The requirement which would apply to both FE and HE entrants would mean that the postgraduate student who has studied the subject concerned or a closely related subject as part of their degree.

The recommendations are outlined in a paper which is to form draft advice to the main Advisory Committee for the Survey and Education of Teachers. It is intended to introduce tighter control of second subject studies.

John Steel

The author is general secretary of the National Society for Art Education.



Students attack Western 'war drive'

by David Jobbins

The National Union of Students has made a radical departure from its neutral approach to peace and disarmament.

Its annual conference in Blackpool voted against the wishes of most of the executive to blame Western leaders for rising international tension.

In addition to following the Campaign for Nuclear Disarmament and voting for British withdrawal from Nato, delegates declared their opposition to a "war drive" which they

said was being mounted by Western leaders including Mrs Margaret Thatcher, the Prime Minister.

A resolution accused Mrs Thatcher and Mr Paul Nitz, the US chief negotiator in the Geneva arms talks, of trying to make the idea of a winnable nuclear war acceptable to the people of the West by claiming the Soviet Union was planning a war.

The new policy was opposed by president Mr Neil Stewart when it was proposed by Mr Kevin McGill from Ruskin College, a Communist Party member. It will add to the already

strained relations between the NUS and ministers who are critical of the union's support for the CND.

Mr McGill told the conference: "That nutter in the White House does not believe in disarmament. He believes in putting his finger on the button as soon as he sees a situation which will enable him to do so."

But Mr John Murray, a Liberal executive member, said: "We cannot ignore the Soviet Union in the arms race. This motion totally apologizes for and justifies rearmament in Eastern Europe."

Delegates reject call for voice on NAB

Delegates overwhelmingly rejected a demand that the NUS should seek representation on the National Advisory Body for public sector higher education.

The conference authorized instead a call for direct action leading up to a national festival for education on March 10, expressed opposition to two-year degrees, college closures and criticised the Youth Training Scheme. But proposals for a "Break a Rule" day demonstration by further education students were dropped after one further education college delegate had appealed to conference not to patronise the colleges.

Conservative students tried unsuccess-

fully to argue that there had been no savage cuts in the universities and that higher education should be made more relevant to the needs of industry and commerce.

The attack on the Youth Training Scheme was led by Mr Steve Morgan, for the executive, who accused private training agencies of seeking to profit from it. "We will not surrender the education system to the lunatic hustings of private capital," he said.

Attempts to force Mr Tommy Sheppard, vice president education, into resigning were unsuccessful when a motion expressing no confidence in him and accusing him of "plagiarizing"

large elements of Labour policies into his latest policy statement on education were rejected by the vast majority of students.

But evidence of a split on the executive came over the discussion on grants policy, when the conference voted for a £30 a week minimum for all students.

The NUS had claimed a £30 a week minimum for all college students when a move to extend it to university and polytechnic students was defeated on the casting vote of the national secretary Ms Jane Taylor, the national secretary. This defeat for Labour students was overturned by the conference.

Mr Simon Spalding, the only Conservative on the executive, said after the proposal was accepted by 315 votes to 222: "This is an apologist motion for the Soviet Union. The executive realizes this policy will not be supported by the vast majority of students. If you had thought of anything you could do to damage your cause you would not have done it better."

The conference's overwhelming support for the National Graphical Association in its dispute with the Messenger group of newspapers will also widen the gulf between the NUS and ministers. After hearing from Mr John Ibbotson, the NGA official who handled the early talks with Mr Selim (Eddie) Shah, the proprietor, delegates collected £350 for the union.

Mr Ibbotson appealed to students to dig into their pockets to hire coaches to travel to Warrington for this week's demonstration and Mr Bob McLean, the NUS Scotland chairperson, appealed for a "massive student presence".

An emergency motion condemning violence but decrying the "folly" of using the law to reconcile an industrial dispute was supported.

There was disappointment among Labour supporters that there was no Communist on the NUS executive when Labour student Ms Lesley Smith won a straw poll to fill a vacancy.

College refuses to close

by Patricia Santinelli

Catholic bishops and governors of De La Salle College, Manchester, this week snubbed Sir Keith Joseph, Secretary of State for Education, and decided to keep it open.

The governors were considering three options put forward by the Department of Education and Science on the future of the college, one of which would have meant total, almost immediate closure. The college has already been ordered to cease recruitment to teacher training form next year.

A statement issued by Bishop Holland, chairman of the board of governors, said: "It was agreed at a meeting of the governors that De La Salle will stay open in response to the wishes of the Bishop's Conference of England and Wales and with the backing of the Catholic Education Council."

Last week the bishops made it clear they were not prepared to accept Sir Keith's proposals for the college and would continue to fight both for its survival and to retain their historic share of teacher training places. They decided to join with other voluntary bodies to ensure that Sir Keith would observe "proper" consultations procedures.

Bishop Holland's statement gave no indication on how the college intended to proceed. The DES's third option was that it should seek to establish itself permanently as a "diversified" institution.

The department warned however that by doing so the college would be exposed to the full glare of a National Advisory Body review. Like all other institutions it would have to be financially viable.

New member

Professor Colin Dollery, professor of clinical pharmacology at the Royal Postgraduate Medical School, University of London has been appointed to the University Grants Committee to replace Professor E. D. Acheson of Southampton University.

Prejudice and equality

Sir, - In your otherwise positive editorial (THES, December 2) on the need to tackle the institutionalized racism within Britain's higher education system (although you might have noticed that several polytechnics and even some universities have made real efforts - not least within the social sciences) I must question your divisiveness between excluded groups.

You write: "If a tenth of the energy that has been exercised in promoting the interests of women in HE could be used in the cause of the blacks spectacular progress could be achieved." While it is true that many women - and some men - have fought to achieve greater justice within HE, it is up to you to tell us more about this "spectacular progress".

I am conscious of the cuts first in teacher training and then the social sciences, which sharply affected the educational opportunities for women. Despite the talk, I do not see women's faces much within science and technology faculties, except in the usual places as secretaries, technicians and cleaners.

Oh, yes: women did enjoy biology but that is a cut area too. Women and their allies are having to redouble their efforts merely to stand still.

"Spectacular progress" has not delivered many top jobs to women. We have no women vice chancellors, no women directors of polytechnics, and, for that matter, no woman editor of THE THES. Yet we are nearly 52 per cent of British society.

Your editorial is divisive, in that you set the interests of women against those of blacks. Rather, we both, like disabled people, have a common problem of predominance of the values and politics of the white middle class male.

It is him who has to make space, not



Strategies against prejudice must start in schools

only within the present sadly constricted size of HE but also as part of a more generous and socially imaginative vision of the purposes of higher education.

In this situation it is sad to find THE THES sharing these values, for a classic method of blocking reform is to set one excluded group against another. At very best your editorial merits one cheer.

Yours truly,
HILARY ROSE,
Professor, Postgraduate and undergraduate schools of applied social studies,
University of Bradford.

Sir, - I fear your article on the exchange of correspondence between the informed anti-racist group of the Commission for Racial Equality and the Polytechnics Council for the Education of Teachers (THES, December 2) may be so compressed that it may exacerbate an already sensitive area of work where progress is beginning to be made. As I understand it, the difference between the two groups

is not that one is in favour of and the other against teaching to correct for racism. It is basically about how to achieve that objective.

One of the problems that we know almost nothing about appropriate educational strategies against racism, prejudice and action. We know from some previous work that regression may occur where appeal is made to the judgment of those involved, ie where the strategies are part of education rather than propaganda. But much more work is needed before anyone can be sure of the "how" of this issue.

What we now need is for all those who would eradicate racism from our society to work patiently in education and the wider society to achieve that goal. There are neither instant recipes nor panaceas, only unlimited scope for the kind of misunderstanding which your headline and article may unfortunately and unintentionally serve to cause.

Yours faithfully,
JAMES LYNCH
Dean of the faculty of education,
Sunderland Polytechnic.

RIBA conference

Sir, - The amount of space which you have recently devoted to matters of architectural and town planning education is commendable, but the account (THES, December 2) of last week's Royal Institute of British Architects' education conference hardly gives an adequate perspective of the issues discussed.

In particular, your report does not reflect the widespread mistrust of the shaky statistical base which has been used as an argument for further reductions in the resources currently available for architectural education (let it not be forgotten that two UK schools of architecture have already been closed in recent months).

Nor do you mention that the Department of Education and Science's permanent secretary's presence at the conference was very temporary. Had Mr Hancock stayed longer than about half an hour, he could have learned something about the nature of architectural education and the need for architects.

According to him, the DES intended "to balance the education of architects against the need for engineers". I wonder if he realises that there are at present 200,000 chartered engineers, as against 28,500 architects.

Moreover, a young graduate architect has at least four times more chance of being employed than a graduate engineer. (According to a Lancashire University job survey only medicine and pharmacy have a better employment record than architecture.)

There is something altogether strange about Mr Hancock's data. He declared that engineering and accountancy had the best job record, quoting from a DES survey which is apparently to be published early next year. However, when I asked a senior DES official about this, he replied that he had no knowledge of such a survey.

I believe that debate on architectural education is vitally necessary, but it will be productive only if it is founded on reliable data.

Yours faithfully,
ANTHONY FORWARD,
Associate dean,
Architecture and allied studies,
Huddersfield Polytechnic.

Student quotas

Sir, - With reference to the letters from Professor Edwards (THES, December 2 and 9) are not "professional and managerial children" also part of working families even if most such families do not subscribe to the "working class" labels and mythologies of the Left, particularly its academic strata? Yours faithfully,
R. MOSS,
Teesside Polytechnic.

Up in smoke

Sir, - The chairman of the education committee of the Association of Metropolitan Authorities, Mrs Harrison, has allowed herself to be pictured smoking. Indeed, flourishing her cigarette (THES, November 18). As an educationist, she should set a good example at public meetings.

Yours sincerely,
JOHN GILLARD-WATSON
32 Beech Croft Road,
Oxford.

Irish history

Sir, - In your issue of November 11 George Boyce reviews for you four books on Irish "history". Because they are reviewed in THE THES one assumes that somebody somewhere regarded them as possessing academic merit.

It is usual, when there is a successful revolution, for the beneficiaries to write detailed accounts of it, laudatory and uncritical. Their value as history is on a par, say, with longwinded partisan accounts of struggles between the "Auld Licht" and the "New Licht". They miss the egos of their supporters, bore everyone else and have only a sketchy relationship to the general history of the country and time.

The truth of history, as Belloc said, lies in proportions. If the proportions are false then the history is false.

Detailed footnoting, interminable detail, abundance of sources are alike useless without a sense of proportion. Without it the history of a cricket

club or a pushponny league would be equally useful and probably more riveting.

The history can only be written by asking serious questions, searching for all the evidence pro and con and abiding by the result. This distinguishes it from hagiography (in the popular sense), ideology and propaganda.

I would suggest that historians, historical sociologists, social historians, economists, political scientists, etc. might start asking real questions about Irish history. For example, apart from the musical chairs of political appointments, did Irish independence bring about real change in Irish society? If so, in what respects and were the changes beneficial?

To date, the only real critique of the Irish revolution has come from the Irish language movement and they condemn it.

Yours sincerely,
DEBB KERNAN
128 Blenheim Walk,
Wembley Park, Middlesex.

CND badges

Sir, - To reply to Dr. Boley (THES, December 2). There is a clear distinction between the political, unacceptable, and the charitable, reluctantly acceptable, in its use as a matter of Christianity or CND.

Yours faithfully,
ERIC SAMUEL
Faculty of Law,
University of Southampton.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Engineers join Open Tech

by Felicity Jones

Contracts have been signed between the Engineering Industry Training Board and the Manpower Services Commission's Open Tech programme to develop a £730,000 open learning project in engineering design.

The initiative is a direct outcome of the Finistion report's emphasis on continuing training of technical staff in design skills and the Government's wish to assign a higher profile within industry to design.

The Open Tech money will be used to support the development of eight distance learning packages and the production of the knowledge-based written text and video material will be carried out by Cranfield Institute of Technology's centre for engineering design with the EITB.

The programme will start as a pilot scheme and EITB training staff will

establish schemes in about 50 companies and initially involve some 500 learners. The first two packages - in "Design for economic manufacture" and "Computer-aided design engineering" - will take 11 months to develop and validate.

Another award of £800,000 has been to the Business and Technician Education Council to try out new ways of teaching technicians and supervisors about the application of new technology in business.

BTEC's existing post-experience units will be developed as "open" learning packages for experienced workers at two regional centres based at the North West Management Centre at Chorley and Slough College of Higher Education.

A third signing of contracts has been drawn up between the National Institute for Careers Education and Counselling and Open Tech.

MSC to cut two thirds of places

The Manpower Services Commission is about to cut nearly two thirds of the places directly provided by local authorities and colleges on the Youth Training Scheme for 1984/85 in spite of opposition.

This is revealed by MSC papers considered this week by the Youth Training Board which categorically rejected the proposals and asked for the regions to be consulted at its November meeting.

The cut would mean that Mode B2 (college-based) provision, which was targeted to fill some 55,000 places this year but filled only 20,000, would be set at that figure for next year.

This is in spite of the fact that the MSC expects 460,000 entrants on the scheme next year and intends to retain Mode B1 provision at 80,000, although only 60,000 places have been filled.

The MSC's argument for cutting back Mode B2 provision is that in many parts of the country early summer leavers joined Mode B schemes because these were the ones available at the time. It says that a sizeable proportion of this group would in the opinion of local officials be as well provided for in Mode A (employer based) schemes.

The commission also proposes to experiment in combining local Mode A and Mode B schemes so that young people who need it might get the benefit of experience on both types of provision in their YTS year.

No extra funding is likely to be available to promote a change in the eligibility rules to admit a greater number of unemployed 17-year-olds. The original cost of the scheme set at £1,000m is expected to be reduced to £800m through the shortfall.

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Fighting separate issues without choosing separatism

A group of feminist teachers producing materials designed to combat sexism in the classroom recently refused to provide examples of their work for a male teacher, who wished to use them in his lessons. While there are circumstances when female solidarity may dictate the exclusion of men, behaviour of this kind seems quite indefensible.

Men who have accepted feminist arguments about the oppression of women and who actually wish to take some action to improve the situation should be welcomed with open arms rather than dismissed. Those women concerned should have been grateful for such support. Their action can only be described as petty and politically naïve.

It does, however, raise a wider issue than merits consideration. Should social movements designed to alter the position of particular social groups be primarily run and organized by the group concerned? Should those who are not members of the group but who sympathize with its cause be encouraged to join the fight or asked to take a back-seat?

Can whites take up the cudgels on behalf of blacks? Can heterosexuals campaign for the rights of homosexuals? Have the rich a part to play in pressure groups for the cause of the elderly or of unemployed youth? Or should the "spokespersons" of all these groups be representatives of the groups concerned?

It is indeed possible for men to campaign on behalf of women or whites on behalf of blacks without seeming to be paternalistic or even patronizing? Is it possible for any man or any white person to have a full understanding of the way in which the structure of the society and the attitudes of those in the dominant groups restrict opportunities for the weaker groups who are in a minority?

Assuming that it is not possible does that in itself preclude them from taking action in support of the claims of these groups? How far does membership of one such group make it easier to identify with and understand the demands of the others and give greater legitimacy to active participation in the campaigns of the others?

Those of a conservative disposition can often be heard railing against wealthy socialists who fight for the redistribution of wealth or income from the rich to the poor. The charge of hypocrisy is often made. People like Tony Benn have sometimes been the victims of this kind of criticism.

Charges of this kind have always struck me as misguided and unfair. Accidents of birth should not preclude people from playing a prominent role in fighting for others less privileged.

Continuing Labour parties which dwell at length on the social origins and current occupations of candidates at selection conferences at the expense of questions about their political record and their potential as elected representatives seem to me to have got it wrong. And while a life-style of conspicuous consumption would be wholly unacceptable, it seems to me to be wrong to demand pauperization and the life-style of John the Baptist.

But to return to the questions I have posed, there can be no simple answers. In all cases the victims of inequality and oppression must be at the forefront of the battle to promote change. It is totally unacceptable to argue that because they may be less well informed or less articulate than others who might speak for them, their role either fighting for reform or in co-ordinating

the nature of these reforms and how they are introduced should be anything other than maximized.

One of the most offensive public statements I ever heard was at a debate on abortion at the Cambridge Union in 1960. An undergraduate stood up and said how glad he was women were not allowed to be present (I was in the public gallery) since these matters could not be rationally debated with women since they were so emotionally involved. For this outrage he was applauded and supported by a Conservative politician and a bishop.

It could not happen today? Perhaps not. But not dissimilar responses can be heard about the participation of, say, young people or poor claimants in debates about their rights from those who should know better.

There is also no doubt that membership of one group that has suffered from prejudice or discrimination does heighten a sense of injustice about other groups and perhaps gives the individual concerned more authority to speak on behalf of other such groups.

I have never forgotten the sense of anger and rejection I felt when I was refused entry to a library in a men's club (not places I normally frequent) where I wanted to wait while the person who had asked me to meet him at the club was unavoidably delayed. An utterly trivial and unimportant event in itself but one which made me far more aware than before what a black person must feel like when turned away from a club or restaurant.

At the same time I would feel reluctant to speak on behalf of black groups. For they must speak for themselves just as women must do the same.

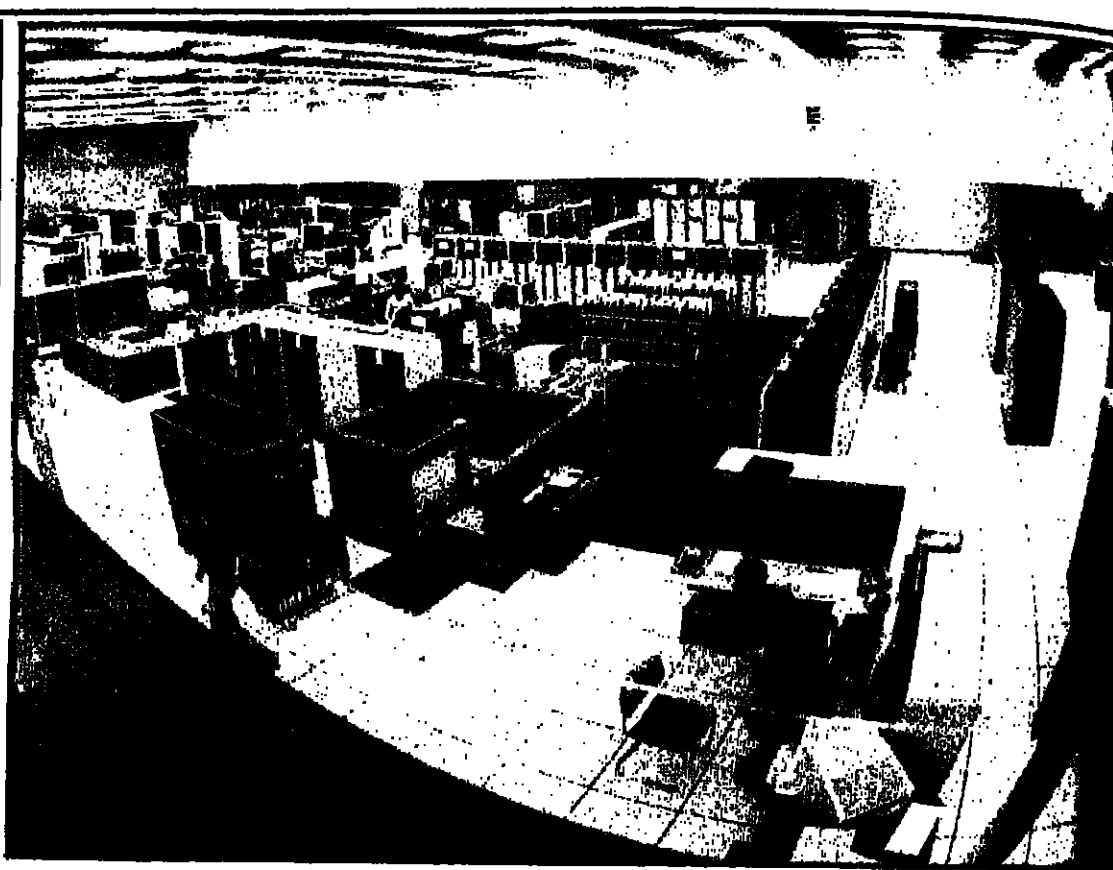
Having said this, I would be sad if black groups rejected white support. It is surely desirable to maximize the support for greater equality between groups.

It is for this reason that the feminist teachers to whom I referred at the beginning seem to me so misguided. Separatism and exclusiveness are not constructive responses to fighting a political battle.

Consciousness-raising for members of oppressed groups has its place. However consciousness-raising should be applied to everyone, not just to those in the groups themselves who need to be made aware of their own position and power. "Outcasts" should not have to succumb to the Zelig syndrome in order for their support to be accepted and for them to be incorporated into political campaigns for reform.

Nor should those of us who are feminists or black anti-racists or fighting for gay rights have to treat all men, whites or heterosexuals as our enemy. Some men have recently by telling me that they were regarded as a female chauvinist because at an official party where most of the guests were male civil servants I had only talked to the males, who happened to constitute 90 per cent of the guests - a fact which happened to regard as highly unfortunate. But because I did not pick out the 10 per cent who were women and talk to them does not mean I was a woman's enemy.

I reserve the right to be fighting for women's equality and to be talking to men of my acquaintance who persuade me of the justice of the cause and to invite them to join in.



The European Nuclear Research Centre (CERN) in Geneva: too expensive for Britain to support?

Is big really beautiful?

Can we afford big science? Jon Turney, our science correspondent, reports from the meeting of the Association of British Science Writers in London

Are your experiments getting more expensive? Well, it's no good just asking the Government for more money. You need to ask for some of the money they're giving to someone else.

Crude logic, perhaps. But logic that British scientists seem more prepared to follow than for many years. If times are hard, and that next experiment is really crying out to be done, a colleague's money is as good as anyone else's.

In this climate, those conspicuous consumers the particle physicists and astronomers - the "big scientists" - have to work even harder to justify their slice of the cake. They were working especially hard last week at a meeting of the Association of British Science Writers in London to discuss the simple question: "Can we afford big science?"

Actually, no, said the small scientists, represented by Dr Colin Humphries of the department of materials science at Oxford University and Professor Michael Hart of the physics department at King's College, London. Both work in areas supported by the Science and Engineering Research Council and both argued these areas were grievously underfunded.

The most spectacular figures, in an evening of figures, came from Colin Humphries, who demonstrated that Britain spends around £4m a year on materials science research - a key contributor to technologies like microelectronics - compared with over £200m in the United States. "We're a long way at the bottom of the league, and losing out in all sorts of fields," he said.

Michael Hart pointed to similar privations in "small physics". His solution? Take the £27m the SERC pays Research Council (CERN) and use it for supporting a larger community of researchers in university laboratories, researchers whose work was generally much more likely to produce industrial benefits.

He accepted the scientific and cultural value of big science. But the industrially relevant research had to be done now. "The expensive members of the community have to answer the question: why is it important to do their work now, rather than in 100 years' time?" The end of the universe, if there was one, would still be there a century hence, he reckoned. So scientists must take action.

One of the big science issues open to small scientists was the CERN. Humphries also chose to bring up the case for the CERN. "Un-ambiguously the best question is how much money we should spend on it," he said. "But if there was no money he would go

for nuclear physics, not astronomy and space research, because it was less closely connected to the rest of science.

Dr Humphries had a further argument for the shift in resources. "If there's no more money for little science, whole areas will die - and then in 20 years whole areas of British industry will die." If that happened, there would be no more money for little science in any case.

In the face of this onslaught, the case for big science was put by Professor Gordon Ramsay of Leicester University and Professor Derek Collier, chairman respectively of the SERC's astronomy, space and radio and nuclear physics boards. Big scientists evidently need to stick together and neither argued that spending on the other's subject should be cut. Instead, they made a composite defence.

They argued that spending in both fields was already decreasing as a proportion of the SERC total. Ken Pounds put his subject in context by estimating the astronomy and space board's total spending of around £40m a year as 17 per cent of the SERC's annual budget, one per cent of total British research and development costs and a mere one-fifth of one per cent of the country's income. This put it rather near the bottom of the league of developed nations, "at least a pity, if not a scandal," he felt.

Besides, Britain had a record second to none in astronomy, stretching back to the sixteenth century. Add to this the subject's educational and cultural value and "it really would be a disaster if we as a country decided we couldn't afford to do it," he said.

Derek Collier finished his presentation, which included an explanation of the technical reasons why high-energy particle physics machines are so expensive, in similar vein. The areas of current interest in nuclear physics - the nature of force, mass and charge and the reasons why sub-atomic particles fall into families - were "fundamental topics that could affect all of physics".

They might have totally unforeseen practical consequences, he argued. After only a few hundred years of serious science, nature must still hold some surprises.

In the other corner, these defences of traditional big sciences, which themselves had a traditional flavour, cut little ice. Professor Hart was set on thinking the unthinkable. "If the CERN subscription were cancelled, that would happen to Great Britain," he said. "We could still maintain a presence in the international physics community with a few first-rate departments." A very pragmatic approach, and a very small view of UK science, Professor

Pounds felt. Where would it end? "Scientific suicide," according to Derek Collier. It was strange to talk about destroying excellence to create excellence elsewhere.

The big spenders were stung to counter the attack from little science with criticisms of their rivals for hubris. If materials science was in such desperate straits it was the fault of the SERC's engineering board Ken Pounds suggested.

The engineers had a great deal more to £6m a year to spend. And as for small physics: "What is the evidence that all this first class physics hasn't been done in the last ten years?" he wanted to know.

Maybe there was a shortage of physicists - and you couldn't create a boom in a subject overnight just by pumping money into it. "It's clear we can kill, or damage, but it's clear we can improve anywhere else," he said.

This was an informal evening discussion, not a meeting of the SERC, so the cleavage between different scientific communities was ultimately blurred by the absence of any conclusions. But there was a definite sense the big scientists were on the defensive, and uncomfortably so.

Ken Pounds, an idealist perhaps, put in a strong plea for physicists to stop arguing among themselves and work together to increase the total science budget. There should be a lobby for science, someone said. Perhaps the physicists should take to the streets.

But the chairman of the advisory board for the research councils, sitting thoughtfully silent in the audience, didn't think this would get very far. Sir David Phillips responded to a question from the chair: "The response from Government is likely to be, 'but you get half a billion pounds a year, surely that's enough to support your priorities?' And as Ken Pounds conceded, it was much easier to make a scientific case for astronomy than to compare it with money for frigates or missiles.

Maybe the comparison with frigates wasn't too hard, he said. "But if I had £100m, I would have a problem deciding between hospitals and telescopes." So it looks as though the big scientists had better keep their arguments quiet and the small scientists are going to keep up the pressure for some rationalization of the crisis in funding basic research.

"I think things are so desperate, we have to take a drastic step," he said. More voices are likely to be raised, agreeing with this in the next few years.

Events

The Association of Learned Societies in the Social Sciences will hold its next annual conference on "Postgraduate training in the social sciences" on Friday, January 6, 1984 at Imperial College, Prince Consort Road, London. The speakers will be UGC chairmen Sir Peter Swinnerton-Dyer. Details and application forms from Dr Peter Willett, department of systems science, City University, London EC1Y 8HB, tel: 01-253 4399 x401.

Advance notice is given of a conference entitled "A future for English?" sponsored by the Higher Education Teachers of English and to be held at the University of Reading from April 10-13, 1984. Speakers will include Catherine Beley, Denis Donoghue, David Crystal, Karl Miller. For further information, contact David Gervais, conference secretary, tel: 0734-875123.

The Northern Counties Kidney Research Fund this week completed the endowment of the chair in clinical science at the University of Newcastle. The final instalment of £30,000 to fund the post for a kidney specialist was presented to the university by Mr Freddie Grea, chairman of the fund.

The University of Essex is to appoint a director of continuing education next year in a bid to expand its part-time training and skills updating for industry and business.

The 11th annual conference of the UK Association for Legal and Social Philosophy will be held at University College, London, from April 6 to 8, 1984, on the theme of "Discrimination and equality". The address will be given by Professor Amartya Sen on "Rights and goals". Further details from Mr Stephen Gould, faculty of laws, University College, London, 4-8 Bedford Gardens, London WC1R 6EG.

Grants

ASTON UNIVERSITY: Dr K. S. Bedi, £3,000 from Wellcome Trust (effects of microinjection on embryos); Dr B. E. Willett, £15,350 from SERC (over changes in the structure of the plasma blockage); Dr C. P. Mitchell, £24,818 from United Kingdom Atomic Energy Authority, Harwell (experimental study of short range scattering for energy); Professor M. J. Owens, £64,377 from Natural Environment Research Council (biotechnology in research into hardwood culture); Dr D. P. Fox, £21,649 from SERC (development of a new type of catalyst for the conversion of organic waste into a liquid fuel); Dr J. C. P. Fox, £21,618 from Cancer Research Campaign (risk of colorectal cancer); Dr J. C. P. Fox, £21,618 from Cancer Research Campaign (karyotype analysis in relation to cancer susceptibility, aetiology and therapy); Professor Robertson, £55,000 from SERC (development of a new type of catalyst for the conversion of organic waste into a liquid fuel); Dr D. P. 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Researchers consult oracle

from Geoff Maslen

MELBOURNE Australian university academics and the leaders of research projects in both industrial and government organizations have been invited to participate in an antipodean "think-tank" using Delphi methodologies to try to predict changes in the next five to ten years.

The Australian Technological Change Forum, a privately financed, non-profit-making group has been set up to use extensive consultations and computer projections to identify the direction and extent of emerging trends in technological change. It will then set out the options for managing that change.

The forum has been established by the Productivity Promotion Council of

Australia and is intended to help organizations avoid the trap of thinking that the future will be just like the past and the present, except there might be a bit more, or even a bit less of it.

The forum will publish reports to provide the public with an overview of emerging changes to help encourage debate and help industry and government plan appropriate strategies, according to a council official.

The council's confidence in the forum's success is based on the result of a series of futurology seminars held in 1979. They predicted that the oil panic would be short-lived and that the development of alternative energy sources would be severely hampered by too little money spread too thinly.

"In 1979, we were also extraordinarily

accurate in computers," the official said. "In terms of both developments and their implications, we fixed 1984 fairly accurately."

He said the forum would be based on a reference group of about 500 people and this group would be asked to nominate 200 others considered to be most qualified in their fields. These 200 experts would select the most important processes of technological change, and the top 20 areas would then be examined thoroughly.

The Delphi method grew out of the American race to put a man on the moon in the 1960s. Its supporters say that because the pipeline in feeding through the effects is about five years long, it is remarkable how accurate practitioners can be in defining what changes will occur.

Death sparks protests in Poland

A new anti-government campaign may soon be launched in Poland, in connection with official inquiries into the death last May of school-leaver Grzegorz Przemyski, the Polish press predicted last week.

It is expected that any campaign will become evident at first in the universities, particularly among first-year students who were Grzegorz Przemyski's contemporaries.

Grzegorz, who died a few days before his 18th birthday, was the son of the poet Barbara Sadowska, one of the leading figures in the Catholic church's relief committee for people interned under the martial law regulation and their dependants.

Grzegorz's arrest and subsequent death were widely considered to be a reprisal against his mother's activities. His funeral became the largest anti-government demonstration during the martial law period.

According to underground Solidarity sources, Grzegorz and a few of his friends visited a wine bar in the old city of Warsaw on their way home from their Matura (A level) exam.

On leaving they were stopped by uniformed police who asked to see their identity papers. Grzegorz said that he did not have his with him, and added that he was not obliged to do so, since he was a Warsaw resident and the martial law ruling which obliged citizens to carry their papers at all times had been suspended.

The boys were taken to the police station where Grzegorz was viciously beaten with a truncheon in the presence of a friend, who reported later that the policeman urged each other to "hit him in the guts - that won't leave any marks". After the beating, Grzegorz was taken in a special "drunks ambulance" to the Hoxa Street casualty station.

Afterwards at home Grzegorz's condition rapidly deteriorated. The next day, after considerable difficulty, his



Solidarity supporters move away from a cloud of tear gas as Polish riot police move in to disperse a rally.

mother managed to get him admitted to hospital, where it was found that his intestines had been crushed and he was beyond medical help. After several hours agony, and a subsequent 10-hour coma, he died on May 14.

His death was a signal for protests throughout Poland. Matura candidates boycotted school-leaving balls, although warned that they might be barred from university if they did not turn up. Teachers and university lecturers throughout the country signed letters of protest, followed by miners and factory workers. Underground Solidarity cells in Warsaw factories put wreaths on the grave.

Under this pressure, a government inquiry was initiated, but at first, this was little more than a cover-up.

On September 7 the prosecutor's

office admitted that Grzegorz had suffered serious injuries both in the police station and in the casualty station and announced that the two policemen and two ambulance men would be charged with participation in the beatings.

Since September, many of Grzegorz's fellow Matura students have begun their university studies. On All Souls' Day his grave was decked in the Polish manner, with flowers and lights. But instead of the usual few bunches and candles, the ground was carpeted for many metres around.

The trial of the four accused is due to open "shortly" and on December 4 Warsaw papers carried warnings aimed at those who might make it an occasion for demonstrations.

UN chooses Finland for economic institute

by Patricia Santinelli

A world Institute for Development Economic Research, the first independent research and training centre of the United Nations University is to be set up in early 1985 in Helsinki at a cost to Finland of some \$40m.

The decision was taken last week by the UNU council after year-long negotiations during which the Finns eventually outbid the Netherlands, another leading contender for the WIDER.

Finland's contribution to the UNU's endowment fund for WIDER now represents the second largest contribution the first being from Japan where the university has its headquarters.

Describing the offer as outstandingly generous, UNU rector Soedjatmoko said that the agreement marked a significant advance in the implementation of the university's medium term perspective.

He pointed out that the proposal for WIDER arose from the need for an integrated scientific effort of the highest quality that had been made urgent by the deepening economic difficulties of almost all countries, irrespective of their economic and social systems and levels of development.

The WIDER was first discussed at a London School of Economics meeting last year when it was agreed that existing economic and social approaches were inadequate to meet the policy challenges confronting the third world.

The UNU then decided that no existing institution could or was in a position to deal with these problems because of the limitation of national considerations as well as the need for a totally fresh approach.

The university was keen that the new institute's policy oriented work

on global economic problems should transcend such boundaries. For to achieve its objectives, WIDER would have not only to concern itself with the problem of industrialized countries but those of the south, both in relationship to the north but also on its own.

The institute's work is also intended to be multi-disciplinary and to adopt a global perspective in order to assess the impact of national policies on humanity as a whole.

Among the research topics, the institute is likely to be concerned with a study of the international impact of domestic policies, international public goods and the "free rider" problems, assessment and reform of the network of international economic organizations, the role of social security in both developed and developing countries the arms race and the economics of disarmament, and cultural and religious values and economic motivation.

WIDER is also being envisaged as a small, pluralistic, interdisciplinary group of scholars researching aspects of the global economic system that affects the development prospects of the poorest countries.

In addition to its extensive research programme, the institute will have a training role, under which young scholars, especially from developing countries, will have an opportunity to participate in research. The emphasis will be on equipping them for similar efforts in institutions in their home countries.

The director of WIDER is expected to be a leading scholar in the developing countries, while the chairman of the board of trustees will be selected among eminent scholars in the industrialized world.

Academics must attack social issues, says minister

from Jessica Kuper

LEIDEN The social sciences had made spectacular advances in the past 20 years and must start to deliver solutions to pressing social problems, Mr Deetman, the Dutch minister of Education, told parliament.

He said that social science research, which is concentrated in the universities, was too closely tied to teaching programmes, and was inhibited by disciplinary narrowness.

His solution was for universities to set up faculty research institutes, each under the direction of a professor, which would address certain pressing themes. The institutes would also benefit from "professional management".

The issues on which these institutes should concentrate were labour relations, ethnic minorities, population issues, problems in public policy and the social and ethical implications of

new technologies. Special funds would be made available to stimulate the development of these research institutes.

The reaction of the social science community has been overwhelmingly negative. Professor Kohnstamm, dean of the faculty of social science at Leiden University, told the university newspaper that the minister seemed to want research on the whole population of the Netherlands "except for healthy middle-aged men".

He went on: "The minister wants the social sciences to come up with solutions to all the welfare problems which have come with the present recession, and all with an extra budget of a million guilders. It is a crazy idea."

Other professors have expressed fears of growing bureaucratization and central control. Professor Crombag, head of the Centre for Research in Teaching Methods, commented that ministry policy itself was in chaos.

Australia backs peace research

The Australian government has invited the Australian National University to put forward a proposal for the establishment of a peace research institute.

The invitation was put to the vice-chancellor of the ANU, Professor Peter Karmel, by the minister for foreign affairs, Mr. Keating. Professor Karmel has appointed a committee to examine whether a proposal acceptable to both the university and the government can be developed. Earlier, Professor Karmel had preliminary discussions on the proposal with the officers of the department of foreign affairs.

Establishment of a peace research centre is part of the Labor government's platform.

Perfect match

The Dutch government plans to match student entry to graduate job prospects. A parliamentary bill will attempt to restrict student further in medicine, dentistry, physiotherapy and physical education.

California puts a ban on staff/student romance

from Charlotte Beyers

PALO ALTO

The University of California's academic senate has voted 20-14 to forbid romantic relations between the faculty and their students.

After a complicated, impassioned debate at the Berkeley campus the professors adopted a resolution noting that such relationships, "even when mutually welcomed" represented a serious breach of professional conduct.

"A faculty member who initiates with a current student a personal relationship with romantic or sexual implications or intentions, or who acquiesces in such a relationship initiated by a current student, can seriously compromise the student-teacher relationship," the resolution continued.

Furthermore, such relationships raise questions of fairness in grading and other academic matters and leave the faculty members vulnerable to charges of sexual harassment and discrimination.

The academic senate invited the faculty committee that drafted the measure to submit a request that the prohibition be included in the faculty code of ethics which would include penalties for non-compliance.

The romance ban applies only to a faculty member's current students. It does not apply to faculty members and students in general, or to students and faculty who have romantic liaisons before or after they are academically linked.



Richard Abrams, a UC Berkeley history professor, and chairman of the committee that drafted the resolution, said it was a logical extension of the university's policies against sexual harassment. "But where the anti-harassment policies focus on unwelcome sexual advances, the romance ban speaks against even mutually desired relationships of an implied or explicit romantic or sexual nature."

In a report that accompanied the resolution, Abrams argued: "Even a single advance to a student by an instructor can poison the environment not merely between the instructor and the student, but between the teacher and other students in the class under his supervision - and all of this whether or not the advance was welcome, invited or rebuffed."

Many of the faculty members at the meeting observed that such a resolution was simply not needed.

"Everybody knows that teachers shouldn't sleep with students. Some things are so obvious to civilized people that they shouldn't be in the rule book," noted Ray Redheffer, a maths professor.

He explained that few professors arrived in class drunk or naked even though no specific prohibitions against doing so exist. He argued that the romance resolution would only succeed in raising suspicions among the public as to what is happening on campus.

Redheffer said that his observations at the UCLA indicated that such a

measure wasn't really needed because affairs between teachers and students are rare.

"I'm sorry it is not extremely rare," responded UC-Davis law professor, Carol Bruch. "Several of my colleagues need to be reminded frequently."

History professor Albert Lindemann, from Santa Barbara, said: "The problem is not that there is a large percentage of faculty members having affairs with their students. It is really that there is a small number who do it a hell of a lot."

Regardless of the scope of the problem, some professors complained that the resolution was meaningless because even if it were put in the ethics code, it could be enforced only by turning teachers into love police.

An informal sampling of opinions among the UC Berkeley undergraduates revealed they would prefer policies to err on the side of romance rather than ethics.

Borany Pheng, a senior, said: "I don't think it's the role of the school to tell professors and students how to behave."

Herant Katchadourian, professor in the department of psychiatry at Stanford who teaches a course in human sexuality, said he had mixed feelings about the resolution.

"It could be called gratuitous. We don't list all the things that faculty and students should not do," he said. "But, on the other hand, it could serve as a conscious-raising measure."

University opens with controversy

from A. S. Abraham

BOMBAY

India's newest university at Kottayam in Kerala state in south India has been founded amid a fierce political and academic controversy which began well before its inauguration in October. Gandhiji University (named after the Mahatma), was created by a special ordinance aimed not at extending higher education to new regions but a making existing arrangements less unwieldy administratively.

The 215 colleges in Kerala (as against nine in 25 years ago) have until now been affiliated to the three traditional universities of Calicut, Cochin and Kerala. The last of these alone with 127 colleges and 600,000 students under its wing. Sixty-four of these have now been put under the jurisdiction of the new university.

The establishment of Gandhiji University is widely viewed in the state as an attempt by the present non-communist coalition provincial government, led by Mrs Gandhi's Congress (I) party, to secure the Christian vote.

More than half the colleges affiliated to it are Christian-run, while the central Travancore area, the catchment area, is largely Christian. The Christian population has long demanded a fully fledged university.

But students, academics and others are unhappy at the way the new university is designed to be run. They see it, as a local legislator has put it, as ushering in "a new era of government control of universities".

Specifically, as many as nine out of 23 members of the Syndicate, the main decision-making body, will be nominated government officials. The provincial education minister will make all the key appointments, with the Syndicate only submitting a panel of names. The government has the right to issue directives to this university, while all the authorities of the university have been made subject to the power of the chancellor, who is the governor of the state and a political appointee. Even jobs with state salaries of less than \$30 a month must be approved by the local government.

The Kerala education minister, proud that Gandhiji University has been set up "in record time", says that the government will not abridge university autonomy, but "at the same time" will have some reasonable control over its economic and administrative functioning.

Overseas policies 'will harm Ontario'

from Mark Gerson

TORONTO

Unless the Ontario government reconsiders its tuition policies for foreign graduate students, the province's graduate schools will be harmed. That warning came last month when the Council of Ontario Universities, which represents Ontario's university presidents called on the provincial government to cancel a projected fee increase for non-Canadians and provide more financial assistance to help them offset current fee levels.

Visa students now pay \$6,930 a year to take a graduate course in an Ontario university. An increase to \$9,240 scheduled for September 1983 was postponed, but the council wants it abandoned and the current fee lowered. Tuition for Canadian graduate students is \$1,500 per year.

Outstanding students from abroad contribute to the strength and international reputation of Ontario's universities and act as goodwill ambassadors when they return to their native countries, said the council.

It is "crucially important" that graduate programmes include a mix of international students, but this will only happen if the financial burden on these students is lessened, said the council. It warned that Ontario universities risk losing "much of the international component of their graduate schools, with all the adverse implications such a risk would entail."

from E. Patrick McQuaid

PRINCETON

The chief executive officer for America's largest designer and distributor of standardized tests has taken a bold step to protect the integrity of the private industry. In the past the Educational Testing Service has issued guidelines to its clients noting that decisions on admissions, hiring and promotion should never be made solely on the basis of test results but in the wake of institutional "abuse". Mr. Gregory Anrig has said that the company will not service offenders.

While ETS is known mainly for its Scholastic Aptitude Test, used by most colleges and universities to review applicants, Mr. Anrig was responding to school districts that are using the national teacher exam; to determine the salary and rank of employed staff who are candidates for promotion.

"It seems just plain wrong to tell someone who has been judged a satisfactory teacher for 10 or 15 or 20 years that the passing of one test on one day is necessary to keep his or her job or salary as a teacher," said Mr. Anrig.

The State of Arkansas recently approved legislation to require all public school teachers to take the exam next year. Teachers would have to pass the battery of tests by 1987 or face dismissal proceedings. Mr. Anrig made

the announcement in Arkansas while attending a meeting of the council of chief state school officers. He had earlier warned that the state's governor, Mr. Bill Clinton, that ETS did not approve of the government's plans.

Staff should be judged "on teaching competencies as determined directly by the supervisory and evaluation procedures of the employing school district," he noted. "Once employed, direct classroom supervision and evaluation of the teachers are possible and justified."

An interesting footnote to the Arkansas initiative: The Reagan government plans to implement new pay and lay-off rules for federal employees that the Congress had legislated out of existence before adjourning last month. One high-ranking official said the complicated five-tier performance rating system, similar to various teachers merit pay plans, "is a return to the apolls system". Employees would be scored more on the basis of their relationship to their supervisors than their performance, he suggested.

The Congress ruled that the Office of Personnel Management may not spend any money to implement the plan and in characteristic arrogance, the office has since determined that federal agencies and departments must implement the plan at their own expense. The unions have indicated they will take the government to court.

The wisdom of standardized tests for college applicants has come under fire from some scholars. The Carnegie

Ankara teachers win their case

from Bernard Kennedy

ANKARA

Three former teaching staff of Ankara University's science faculty have won their case for unfair dismissal against dean of faculty professor Seyhan Karol. The decision was taken by an administrative court in Ankara.

In spite of the significant shortage of university lecturers in some universities and subjects, hundreds of staff have been faced with dismissal or non-renewal of contract over the last couple of years. There have been repeated claims that the sackings were ordered as a result of personal animosity or political differences. It remains to be seen how many will now open court cases against those responsible following the reinstatement of Atilla Yumukoglu, M. Ali Akpinar and Ali Karakaya.

Professor Karol, who became dean in the shake-up which followed the inauguration of the 1981 Higher Education Council Act, also faces disciplinary action by the powerful Higher Education Council.

At the opening ceremony, the dean of the faculty of humanities Professor Larry Davies sided with Eyal and severely attacked Teicher for curbing freedom of expression. Professor Davies said: "After looking at them, I have reached the conclusion that they do not endanger the public."

Last weekend Teicher and the painters-teachers agreed to leave the exhibition open and to place four non-controversial works by Eyal on display instead of the ones removed.

Teicher told reporters that a university must uphold freedom of expression "but only up to a point". Meanwhile, the Israeli military authorities in the occupied West Bank permitted the reopening of the Catholic University of Bethlehem. The university was closed by military order last month for 60 days following days of anti-Israeli rioting and rock-throwing by students.

The reopening followed a meeting between the coordinator of activities in the West Bank and Gaza, Brigadier-General Binyamin Ben-Eliezer, and university vice-chancellor Brother Thomas Scanlon and Rector Dr. Anton Sansur.

Scanlon and Sansur promised to prevent further disturbances on campus.

Last week, Alnajah University in Nablus, another West Bank trouble spot in effect shut down for a few days after Israeli security forces placed roadblocks and checked ID cards at the entrances to the campus.

The roadblocks went up after a campus guard was beaten, presumably by Jewish settlers from nearby Jewish settlements, the place at their own expense. The unions have indicated they will take the government to court.

'Dog show' causes art row

from Benny Morris

JERUSALEM

A struggle between Haifa University administration and lecturers from the university's art department has ended with the defeat of the lecturers and the removal of four politically controversial paintings from an exhibition the department's artist-lecturers are staging. Many university lecturers regarded the matter as a test case for freedom of expression on campus.

The affair began when university president Yosef Teicher, just hours before the opening of the exhibition, ordered the removal of a series of paintings by lecturer Avisha Eyal, entitled "Arab dog - Hebrew labour".

The paintings depicted Eyal's impressions from a stint of military reserve duty at the Ansar detention camp in southern Lebanon.

The camp, set up by the Israel defence forces in the wake of its June 1982 invasion of Southern Lebanon, housed thousands of Palestinians and Lebanese suspected of membership or support of the PLO. The camp was last month emptied of its last 4,500 prisoners, when they were exchanged for six Israeli soldiers held captive by the PLO since September 1982.

At the exhibition's opening ceremony, a number of speakers defined the removal of the Eyal paintings as "detrimental to freedom of expression and academic freedom". After the removal of the paintings, the organizers painted in heavy black letters "painting removed" in the empty spaces and threatened that if the pictures were not restored, the exhibition would be closed.

University President Teicher said that he had ordered the paintings removed "only" because they might provoke political violence on campus.

Eyal, head of the arts department's creative section, said he began the paintings last October serving at Ansar. "What I saw at Ansar caused me a big shock. In Lebanon I saw people and dogs. I understood the Lebanese (by looking) at the dogs; beaten dogs, stray dogs, dogs afraid of people. The dogs I saw prompted in me a surge of creation."

Eyal entitled his creations individually "A bad Arab dog", "A good Arab dog", "A pink Arab dog" and "Arab dog".

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number of appointments to cases, in prudent judgment,

the CCC's shadowy but imminent
influential judgment.

William Makin explores the influence of the priest and physicist Gassendi on his contemporaries

Navigating for Newton...

The port of Marseilles, its arsenal and fleet of galleys, exercised a peculiar fascination for seventeenth-century tourists. Robert Boyle arrived, in 1642, in time to watch the fleet preparing for a royal review. Four years later John Evelyn was rowed by the crew of the flagship *La Reale* and devoted two pages of his diary to the experience. Thirty years afterwards, John Locke did the same. Morbid curiosity? Perhaps Englishmen, reared on heroic tales of the Argosy, or Salamis, experienced a thrill on confronting the reality. Mlle Scudery, the novelist, exclaimed: "I have always thought a slave so romantic—but now I have seen the galleys, I shall see that the word is excluded from polite literature." The motive power for these floating masterpieces of baroque design was provided by thousands of chained convicts—mostly peasants who had been caught up in protests against increased taxation.

Locke, the arch-enemy of absolutism, blamed all France's ills on excessive taxation of the peasantry. For him the galleys had obvious political messages. But what of Boyle and Evelyn? Was there some other factor, common to all three?

In 1640 a Provençal priest, Gassendi, an enthusiastic natural philosopher, had been lent the fastest galley in the fleet to use in various experiments to test the soundness of Galileo's physics. This was an appropriate choice. Galileo's prohibited *Chief World Systems* frequently appealed to nautical examples, and his *Two New Sciences* was set in the arsenal for the Venetian navy—on which those at Marseilles and Toulon had been modelled. In his account of these experiments, published in 1642, Gassendi outlined a corpuscular theory of universal gravitation, defined rectilinear inertia (Newton's first law), and demanded a new physics based on Galilean relativity. Could Gassendi be the missing link between our tourists?

Boyle's autobiography—which abruptly breaks off with the description of the galley fleet—explains that he had been staying near Galileo's villa in Florence, prior to his journey to Marseilles. He had spent his time reading Galileo's treatises. Gassendi's influence on Boyle's subsequent scientific career can be traced in his corpuscularism, his repudiation of the doctrine of a fixed number of elements, and his efforts to repeat some of Gassendi's experiments.

Evelyn, who was resident in France for long periods, was intimate with a number of Gassendi's close friends, including Hobbes and Kenelm Digby. Back in England he threw himself into the movement to revive atomism and, in 1657, one of his relatives translated Gassendi's *Life of Peiresius* and dedicated it to Evelyn. This was the only occasion on which he entered Gassendi's name in his journal. But Evelyn himself translated books by La Motte Le Voyer and Gabriel Naudé. Both were French free-thinkers—outwardly conforming to Catholicism—who had been initiated into a Pythagorean society called *Tétraktys*. Its founder was Gassendi. Despite the apparent orthodoxy of his writings—almost alone of contemporary scientists they assented to the Index in their entirety—Gassendi was, secretly, a Christian. A saint in Provence, an atheist in Paris, quipped Voltaire. Gassendi was not an atheist in the literal sense, but he founded a society in which unorthodoxy could be freely ventilated, in the assurance of perfect confidentiality.

Locke was a secret Apian, a belief which he shared with Newton, who trusted him with the knowledge of his own unorthodoxy. During his several years in France his principal confidant was Dr. Bernier, an old pupil of Gassendi's then engaged in translating his work from Latin into French. He met the Prince de Conti, whose family had protected Gassendi in the 1640s. In his suite was the illegitimate son of the governor of Provence, who had suggested that Gassendi should use the *Reale* for his 1640 experiment. Locke borrowed two major ideas from Gassendi, without acknowledgement: the empiricist psychology of his *Human Understanding*, and the theory that political power grows out of a primary

contract to preserve property. When Boyle died, Poppe wrote a letter to Evelyn that has perplexed historians: "Let... Mr Newton and myself have the pleasure of your company (Mr Boyle being gone) for we shall want your help in thinking of another in England fit to be set up as our Peiresius", adding as an afterthought that Evelyn was another Peiresius too. Why should Peiresius, who was chiefly remarkable for the length with which Gassendi chronicled his life, be published in 1642, be so important? He became the centre of an intellectual *cul-de-sac*, inspiring a popular restoration comedy and a scene in *Tristram Shandy*. His derelict villa, near Toulon, became a place of pilgrimage.

A year before his death, Peiresius addressed himself to a problem in navigation. Data from the lunar eclipse of 1636 suggested a major error in the calculation of longitude in the eastern Mediterranean. When he put this to a meeting of merchants and mariners they protested their maps were sound. Did they not reach their destinations? With Gassendi's assistance Peiresius undertook to show that their charts might incorporate a substantial distortion of distance and yet bring them to port. Gassendi attached such importance to this question that he elaborated it in a treatise on the ancient Greek navigator Pytheas, also of Marseilles.

As the ship sails from Malta to Crete, according to the chart it should follow a straight line. But Crete is really NW of its imaginary position (c) at (B). Some circumstance, unknown to the navigator is inflecting his course along the vector (Aa). His actual voyage is therefore along the diagonal of the parallelogram of forces (AB), so that he reaches Crete after all. Gassendi makes an astonishing variety of suggestions about the possible cause of this inflection: the pilot might have been misled by Kepler's calculation of the longitude or by Gilbert's errors over magnetic variation. He might be drunk, or the crew might quarrel, or they could swerve to avoid a head-on collision. It is a Rabelaisian, ship-of-fools notion of navigating. "A solution to this problem may be of great assistance in solving another matter which has preoccupied us of late." Which matter? This he never reveals.

But what did Galileo make of the *Pytheas* when, after being duly scrutinized by the authorities, it fell into his hands shortly before he went blind? He might recall that he had used a similar route. In his prohibited dialogues to illustrate the relativity of motion; and that Kepler, on the Index since 1616, had used the theory of navigation to illustrate his ideas on celestial mechanics. These were ideas which Galileo repudiated—he had not denounced the idea of action at a distance? There were two clear clues that Gassendi was treating this very problem. Mediterranean pilots might brawl, or get drunk, but they did not navigate by studying Kepler or Gilbert. When Gassendi wrote of "the need to correct Kepler, who in other matters is so accurate", he meant the need to explain Kepler's success in prediction, while rejecting his celestial mechanics. The references to Gilbert recalled Kepler's use of his magnetic theory to explain the elliptical orbit. A planet is like a ship on an ether sea, driven along by a magnetic wind, or perhaps a current, flowing from the sun. The ship has a sun-repelling pole and a sun-attracting pole. When it reaches the furthest point of its ellipse, its demonic "helmsman" was programmed—according to Kepler's laws—to switch from his sun-repelling to his sun-attracting pole.

How can we be sure that a critique of Kepler's Copernican astronomy was intended by Gassendi? Father Bouillau, in his treatise *Philolaus*, which Newton praised in his *Principia*, set out to split the diamond of Kepler's *Cosmology* into its astronomical and speculative components. The three laws were to be retained but the magnetic mysticism set aside entirely. Bouillau suggested that an assumption of gravitational attraction would be sufficient to derive the elliptical orbits without any magic or magnetical repulsion.



But what grounds were there for supposing that Kepler's physics was erroneous, when his system gave the best predictions? Bouillau wrote: "My friend M Gassendi, who has supplied many of the observations in this work (about a third) has pointed to the example of those Mediterranean mariners, who followed charts leading them in a right line. Their actual course followed a curve." This was the meaning of Gassendi's diagram: the lines (Ac), (Bd) represent the inertial velocity of a planet; the lines (Aa), (Bb), the centripetal force of the sun. Gassendi gave the proportions of (Aa) to (Ac) as 1:32 and added that the parallelograms could be repeated indefinitely—which would result in an ellipse. Newton has a similar diagram in *Principia* to illustrate the formation of an ellipse. But he employed the principle of fluxions to explain how each diagonal of the parallelogram diminished, as the time intervals became vanishingly small, so that the resultant was a smooth curve. There seems to be a discrepancy between Gassendi's diagram, which shows right lines, and Bouillau's confidence that the ship would follow a curve. Here is one example of the superior firepower which Newton's mind was able to bring to bear.

Were the sources of Gassendi's confidence empirical rather than deductive? In 1645 he was impressed by the coincidences that another of his collaborators, Father Wendelin, had applied Kepler's third law to Jupiter and his satellites. At the same time, Gassendi and Bouillau had discovered that Kepler's laws, within a certain margin of error, applied to the moon: "It is marvellous that our two sets of observations match", he wrote to Wendelin. But because he was aware of how easily astronomers confused coincidence with causation, he was firm on the need for verification, or confirmation of one part of their system refused to speculate. "Be content with your tables," he wrote to Wendelin, "they will form the bricks in an edifice which posterity must root, and let that be your monument." (And Wendelin was indeed honoured with a citation in the *Principia*.) "It is the vain desire for fame which leads men to cover up their hypotheses instead of seeking congruence with the phenomena. Therefore, let us not blush at leaving mistakes for posterity to set right. Let others frame the hypotheses; for men in every age to come will labour on this structure. If the ancients had left nothing to be discovered, how would we have occupied our leisure? Let posterity say the same of us."

This is only a partial explanation of why Gassendi's physics remained a "heap of broken images". He was never free throughout his life from the shadow of the clerical ban on Copernican physics. Hence the mask of antiquity, the spurious treatises attributed to *Philolaus*, *Pytheas*, *Eudoxus* to conceal proposed innovation. Hence the compartmentalised use of others: the Rabelaisian digressions, and the lodging of vital components of a single theory

among extraneous material in several different works. Gabriel Naudé, another member of the *Tétraktys*, wrote: "A man's thought is free—even in the most repressive tyranny—if he will but learn to wear a mask." Naudé was librarian to the Pope who condemned Galileo and to Cardinal Mazarin. But the perils of betrayal were real enough. Naudé fled to Sweden and Gassendi was threatened by Cardinal Mazarin's informers—a sort of *police perestroika*—who accused him of "secret Copernicanism, secret atheism and political conspiracies." That was, on the whole, a fair summary of his areas of interest.

Although no case was ever brought, Gassendi's pupil Bernier fled to India soon after Gassendi died, to escape what he termed "the long arm of the Cardinal Minister." Someone had suggested to Mazarin that if Bernier were tortured he might divulge his master's secrets. Only when Mazarin was dead did Bernier return, which is how he came to befriend Locke during his three years' stay in France. And all Bouillau had an equally dramatic escape, when Cavalieri—Galileo's old pupil—met him secretly on the borders of Papal territory and warned him of his imminent arrest by the Inquisition. He escaped to Constantinople on a British warship. Under these circumstances it is easy to see that a Catholic Newton would have been unthinkable; and the fanatical hatred which Newton had of Popery becomes more comprehensible.

Historians have puzzled over Newton's claim that he had found his philosophy hidden in symbolic form "in sundry fragments" by ancient authors, which could be reconstituted as the key to his *Principia*. He gave the names of some of these ancients: *Philolaus*, *Aristarchos*, *Democritus*. None of the writings of these philosophers has survived, except in scraps of quotations. On the other hand, all three writers were used as a smoke-screen by Gassendi, or members of his circle, in their efforts to pursue a Copernican physics in secrecy. Gassendi's colleague at the Collège Royal, Roberval, wrote a treatise called *Aristarchos*, in which he pretended to be translating a lost text that advocated replacing Kepler's laws with mutual and universal gravitation innate in matter. Roberval had written a treatise on the composition of forces, which contained the clue to compounding centripetal force with inertia to generate an ellipse. He wrote: "Action and reaction are equal and opposite, which is why the oarsmen in our galleys look one way and row another." It is easy to be deceived by the appearance of antiquarianism. But, as Gassendi and his circle looked back into the remote past, they saw visions of the future. "The true emblem of our Peiresius," wrote Naudé to Evelyn, "is the god Janus."

Because of the success of their cover-up it is difficult to determine how close Gassendi came to whether calculation of intuition guided his steps. Did he realize the relationship between Kepler's laws and Newton's laws, all of which can be found embedded in his sprawling treatises? Did he grasp that Galileo and Kepler held the two halves of a universal science of motion? The fact that he sent his diagram to Galileo suggests that he did. A few months after Galileo's death and Newton's birth, he wrote to the Jesuit H. Fabri: "I recently wrote to a friend concerning Galileo's law of falling bodies, which my own experiments have verified to be approximately correct, though observation is very difficult. Although no task could be more abstruse and laborious I am confident that from Galileo's proportion, which is also the law of the pendulum, might be derived the whole origin and variety of the celestial motions. Indeed, if we adopted that theory for which Galileo was censured, it might be done as easily as you mathematicians derive all the accidents of dimension from the fluxion of a single point."

The unnamed "friend" was none other than the brilliant French mathematician, Pierre Fermat, who had sent Gassendi a mathematical demonstration of Galileo's law, based on a new principle for calculating such curves as parabolas, ellipses and hyperbolas by infinite series. As for Fabri, though he refuted Copernicanism in his writings—in obedience to his superiors—he was evidently sympathetic to Gassendi. "It may well happen," he wrote soon after Gassendi's death, "that the Church will adopt a different attitude to scripture if a demonstration for Copernicanism is ever found." Leibniz made Fermat's law one of the precursors of the method whose prior discovery he disputed with Newton—Calculus.

Gassendi asserted what Newton and others later proved, wrote Voltaire, who is the only source for an alleged aside by Newton to a French scientific delegation, very near the end of his life: "M Gassendi? I regard your countryman as a most exact and wise thinker. I glory in being of his opinion on many questions." If the quotations are authentic, why did Newton not acknowledge Gassendi in his writings? Gassendi's reputation for secret infidelities, which accounts for Voltaire's interest, was already strong in the 1660s. Meric Casaubon argued that, whatever Gassendi's own beliefs might be, his writings were an engine for the overthrow of Christendom which had been "set on work" by a cabal of French aristocrats.

Boyle, Locke, Newton, Evelyn—did they constitute a sort of English *Tétraktys*? All borrowed from Gassendi without acknowledgement. And all found a model in the obscure Peiresius. Locke, it is true, clocked at the Rosicrucians and the "Invisibles" in his *Parish Journal*—but so had Gabriel Naudé and Gassendi. No one has ever satisfactorily explained what Boyle meant by his "invisible college" and perhaps no one ever will. But his only references to it come from the 1640s, immediately after his return from France. Boyle confessed to having lost all faith in Christianity around 1642. He was assisted in this crisis by spiritual advice from a Protestant pastor—John Diodati—a relative of Boyle's

One of the more controversial proposals put forward by the Leverhulme report on the future of higher education was for two-year initial courses which would be less specialized than the traditional honours degree. "Breadth and the ability to integrate different ideas have intellectual as well as practical value," the report said.

This is an interesting order of adjectives in view of the report's concern with the relationship between industry and education, but it has been ignored by both the Left (who view the two-year proposal as education on the cheap) and the Right, who are concerned with safeguarding standards and preserving the honours degree. The "two year" tag has, in fact, deflected discussion from the main point that the Society for Research into Higher Education (which includes Christopher Ball, chairman of the National Advisory Body) wished to make: that the honours degree is fast becoming obsolete. "In the probable employment conditions of the 1980s and 1990s very specialized first degrees are likely to be even less appropriate than they were in the 1960s."

All this is very clear and to the point, whatever one thinks of the two-year proposal. But it is doubtful whether many polytechnic lecturers share the view taken by "well over half" of their university colleagues. They have, instead, been heading resolutely in the opposite direction, especially in engineering and electronics degrees.

Faculty ownership and control of students has increased to the point where students are enrolled, processed through their induction course, handed their timetable and taught by the same handful of lecturers who constitute their faculty. The students respond by internalizing the discovery process as an "engineer" or "biologist" from the day he or she sets foot on campus, although they are no closer to being engineers or biologists at this stage than the rest of us.

One of the ironies of the cuts and the infamous NAB "exercise" is that they have promoted the very condition they are seeking to abolish. Faculty ownership of students has become an indispensable prerequisite for promoting new courses, hiring new staff and raising higher status in the institution generally.

The emphasis on unit costs and staff-student ratios has faculty heads counting their students obsessively. The specialization of courses follows inevitably, not because students are all



Owning their students

John Daniel looks at the way academic departments exercise proprietary rights over their students

honours degree material, but because the dangers of releasing students to other faculties are too great to risk.

The supporting ideology for this process involves ignoring pleas for "integrated degree schemes in which students are able to experience the methods of thought of several disciplinary perspectives" and emphasizing the vocational imperative, which is generally considered to be in the air, or behind the NAB's injunctions, or just plain common sense. It needs no justifying and therefore receives none.

The ideology remains fossilized since the pre-Robbins, postwar era when students came to colleges of advanced technology or technical colleges not because they wished to enter a particular institution, or even to gain access to higher education, but to acquire professional qualifications for

a job. The cuts and the NAB have merely confirmed what many polytechnic lecturers believed anyway: that specialization is the name of the academic game.

Yet in the past 20 years the polytechnics have grown into national institutions, committed to producing graduates on a par with the universities. Apart from the injustices of the binary divide, they have failed to assist themselves in this process by herding students ever more fiercely into the wider spaces of campus life.

The net result is that today's polytechnic students may know more about one subject than their predecessors did 20 years ago, but their capacity for adaptability, for handling general concepts or for critical questioning remains as undeveloped as ever.

The gap—or hiccup—in the educational programme was recognized from the beginning, and an elaborate mosaic of "service" subjects, cobbled together in typical British fashion, was designed to cover the holes. But over the years the servicing "input" has been transformed from a gesture towards multi-discipline study to a series of ancillary subjects all catering to the honours degree.

The parent faculty has absorbed these "extras" and, in some cases, taken over from the teaching as well. The result has inevitably been to increase political in-fighting among staff and among students to present them with even more of an academic tunnel vision than they had before.

"Servicing" was never a genuine interdisciplinary exercise but it is fast deteriorating into a fringe area subject

to "rationalization" (ie meeting vast numbers of students as infrequently possible). If this process continues it is only a matter of time before a polytechnic campus consists of a number of isolated monoliths ranged around an empty space. Any pretensions to "flexibility" or "interaction" will then be little more than a joke.

The obvious way out of this bleak prospect is to develop multidisciplinary modular degrees and this has been done in a number of polytechnics, particularly in the social sciences and humanities. The pitfalls of excessive specialization are avoided, but where there is a "mixed economy" of single honours degrees alongside modular developments as there is in many polytechnics—the game does not really change. It just becomes more complicated.

Faculty heads continue to count "their" students and to manipulate the modular scheme to enhance those areas of specialization which bring greater prestige and power. Those faculties possessing specialized degrees developed earlier stand aloof and continue to rely on servicing instead of partaking in the modular scheme. Newcomers threaten the existing balance of power.

The real solution would be to dissolve the rigid compartmentalization on which faculty ownership of students is based and to plan at least one introductory year which gives all students a genuine sample of various disciplines across the institution. To continue the pretence that school-leavers with two A levels are adequately educated for the modern world is absurd.

Most of them, naturally enough, retreat into their specializations as a way of avoiding confrontation with those "general powers of the mind" that Robbins advocated long ago and which the Leverhulme report is still advocating as a crucial aspect for employment conditions in the 1980s and 1990s. Faculty property rights over students *ab initio* makes them more passive and the institution more fragmented.

The way ahead seems clear, but it is blocked by monolithic faculties whose interests are, at present, more powerful than the institutions which contain them or the students they serve.

The author is a principal lecturer at Plymouth Polytechnic.

Sean McKee describes a striking instance of cooperation between industry and university mathematicians

The University Consortium for Industrial Numerical Analysis is a loose umbrella organization consisting of numerical analysts from five southern universities—Bath Brunel, Oxford, Reading and Imperial College, London—is an association with the division of information technology and computing of the National Physical Laboratory.

The principal aims of the consortium are to bring back real problems into the mathematics departments of universities while at the same time making available to British industry a high degree of expertise at minimal cost. The consortium is governed by a steering committee of senior representatives from the five universities, a coordinator and a representative from the NPL. The committee deals with policy and direction, the coordinator with day-to-day operations.

In 1969 Professor L. Fox and Dr A. Taylor started an organization at the University of Oxford which became known as the Oxford study group with industry. The aims were not dissimilar to the UCINA except that the group concentrates on mathematical modelling.

A few years later, Dr J. Ockendon took over as secretary and started holding one-week meetings in the ninth week of Hilary term, frequently the second week in March. During this week, industrialists and academics work, eat and drink together.

The latter part is often as important as the first, since this is when the real problems often emerge. Problems which have started out as physical descriptions are transformed first into mathematical models or sequences of models which may then admit partial solution. Almost always, though, a numerical solution is required.

The numerical analysts from Oxford found themselves increasingly involved with the study group and it was this that led Professor Fox and Professor Bill Morritt to set up the UCINA in 1979. The five universities were chosen because they already existed in the form of joint research studentships which still take place twice a year at the end of the five.

The coordinator was briefed to build up contact with industry. The Oxford study group was able to provide a 10-year mailing list and Computer Survey, which details all UK firms with computers and the way to which they put them, was another useful source.

A questionnaire was sent to all those firms which claimed to use numerical methods. The response was, predictably, small; however,

Consortium learns to count on academic links with industry

via personal contacts, former students and others, a mailing list of 400 of which 250 are industrial contacts, has been built up and about 100 visits have been made to firms and individuals.

These were by and large to solicit problems for the open meetings held annually at Oxford University or Imperial College. At the meetings, industrialists present their problems and the academics offer solutions to previous problems. The coordinator is responsible for packaging problems in a way likely to be appealing to a numerical analyst.

The industrialist, of course, cannot expect their problems to be solved at one of these occasions. This has happened but it is rare. Usually contacts are made and the coordinator organizes a series of informal follow-up meetings.

Some firms or Government establishments do not like to give a public presentation. In these cases private meetings are arranged to protect either national security or industrial competition.

Areas of research fall within two main areas. Problems either belong to a branch of numerical analysis (numerical solutions of partial differential equations, approximation theory, etc) or to a branch of applied mathematics (stress analysis, fluid flow).

The former is often too rigid. A problem might be reformulated and a totally different solution technique is then required.

The industrial range is almost as wide. The Central Electricity Generating Board has referred problems on fluid flow, galvanic corrosion, non-destructive testing, aging in steel, particles flowing in turbulent fluid, optimal control and gear-box vibration. Rolls Royce has provided problems in numerical conformal transformation and eigenanalysis techniques.

Other firms have mathematical problems in specific areas. Pilkington Brothers are almost exclusively concerned with the flow of molten glass in the production of glass. This is particularly interested in combustion with flow through a porous medium. Studies associated with energy have played an

two-point boundary value problem though the boundary conditions are not clear and the usual routines break down. This starting point led to considerable analysis and the development of further models.

These are only a small selection of the 60 problems considered by the UCINA during the four years of its operation. The original Science and Engineering Research Council funding was for three years but was extended on the understanding that the UCINA make itself self-financing thereafter.

If the UCINA were to be changed into a specialist software house on a proper commercial footing its survival would be guaranteed. It was felt, though, that the proper balance between academia and industry should be maintained.

The UCINA contacted the firms who had presented problems and suggested a contribution of around £1,000 per year for three years in return for further service. The response from British industry was, on the whole, admirable and many firms wanted no more than nominal services such as two annual lectures on some mutually agreed topic.

In some cases, firms wanted consultancy either in the form of commanding UCINA's services for up to 10 days a year when a problem arose or once a month on a specific problem with a definite objective. Other firms wanted to be kept up to date on existing literature and software.

Twelve firms have so far contributed and more may do so. The Department of Industry has been approached and they have agreed to underwrite any shortfall in the £25,000 that the UCINA requires annually to keep alive.

The consortium has thus every chance of surviving beyond 1987. It is even hoped that the university situation will have improved far enough for the coordinator at that time to be offered a post at one of the five universities.

However, if all the funding comes from a university there is a danger that only problems of strong academic interest will be tackled. The ideal solution seems to be funding half from industry and half from a university. In this way a sense of realism is maintained, providing the proper balance between academia and industry.

The author is coordinator of the UCINA. His *Industrial Numerical Analysis*, co-edited by Dr C. Elliott, will be published by Oxford University Press early next year.

BOOKS

To hold the mirror up to nature

by Maurice Evans

A New Mimesis: Shakespeare and the representation of reality
by A. D. Nuttall
Methuen, £12.95 and £6.95
ISBN 0 413 780 4 and 35870 5

Mimesis is out of fashion these days in academic circles, and Professor Nuttall laments in his preface that "one of the immemorial ways of praising a writer, that is by saying that he or she is true to life, has become obscurely taboo, as if it involved some fundamental misconception of the nature of literature and the world". His own position is "that the word reality can legitimately be used without apologetic inverted commas, and that literature may represent that same reality"; and his book is a defence of art as mimesis, in opposition to the claims of the formalist critics.

The debate about the existence or the relevance of objective reality is essentially an academic one: the common reader will have no doubts about the existence of the world outside, as Dr Johnson demonstrated when he kicked the stone; but the old dispute has flared up in new forms and with new vigour as a result, in particular, of the challenge posed by the fashionable structuralist and post-structuralist theories.

In his tough but lucid opening chapter, Nuttall questions upon which the varieties of formal criticism are based - that we cannot know objective reality, or that everything is in the mind; that language is prior to meaning so that literature, therefore, exists strictly within the pale of words; that the distinction between art and life consists in form which should, therefore, be the exclusive concern of criticism. No one, of course, would claim that the human mind can understand the whole of reality; but the ability to distinguish between fact and fantasy, and the recognition in everyday experience that there are natural laws in operation which the human mind cannot bend, prove the reality of the real and our capacity to perceive it. We trawl with the human net and therefore only catch what can be caught in its mesh, but it does not follow that we are the sole inventors of the catch. I and the history of my species may decide what counts as a chair, but I then find so many and no more. Human astronomy is perceptual in the sense that it is from a given point of view, but this does not imply that the knowledge so gained cannot be objective.

The structuralist, such as Jonathan Culler, who assumes that "things are precisely a proposal of language and have no prior existence", cannot articulate the case for distinguishing between different verbal concepts without using language which depends on the distinctions between "things" themselves; and the metaphysical extremist of the movement, Derrida, for whom the only reality is that of "text", is driven through lack of reference to anything beyond it into a position of total scepticism, where the use of language becomes a mere playing with words, and where no statement can claim to be truer than any other, not even the postulates of "deconstruction". In this discourse, divorced from external reality, leads inevitably into a vacuum, and for this reason Nuttall reasserts the dependence of words on the things they denote and of literature on the external life which it claims to represent. He can trust once more in the normal human response to King Lear, for example, as a play which moves us more by its treatment of fathers and children than by its formal exploitation of dramatic conventions, image patterns and the like.

Nuttall is pleading for the restoration of mimesis to its traditional position as a basis, perhaps the basic part, of the aesthetic experience. In his own terminology, there are two languages of criticism, what he calls the "opaque" and the "transparent". The opaque limits itself exclusively to the formal and technical aspects of art, recognizing no other. It is largely a recognition of the fact that, as trained specialists in these matters,



A scene from *Coriolanus*: Volumnia reproaching the tribunes Brutus and Sicinius.

and its value lies in - and originally stemmed from - its insistence that we treat a work of art as a work of art, at a time when literature was in danger of being confused with literal reality, and painting had become obsessed with telling a story. The drawbacks are that it demands a degree of detachment which may come between the formal critic and the purely human experience which art embodies, and it separates both the work and the critic from the common reader.

Transparent criticism, in contrast, acknowledges the importance of the formal, but treats it as a means of comprehending the total effect of the work, not as an end in itself. It considers Shakespeare's use of dramatic convention, for example, as important in so far as it makes possible the expression of truths about human experience which could not be communicated in any other way, and it values the distortions of line and colour in Impressionist painting as intensifications of the nature of actual human vision. It is for this reason more comprehensive than the opaque. Nuttall's "new mimesis" is, in fact, the very old mimesis of Aristotle with this difference, that it pays even more attention to the role of the formal elements in the representation of reality. Where opaque criticism asks only "How is it done and by what verbal or pictorial techniques are the formal

effects achieved?" the transparent critic asks in addition "Is it probable? Is it true?" questions which rarely enter into critical judgment these days.

Art, of course, has never pretended to be literally true - one remembers Aristotle's "probable impossibilities" or Sidney's "Poetry nothing assesteth and therefore nothing lieth" - and this inevitably leads Nuttall to consider the kinds of truth with which literature is concerned. Even the most obviously formal aspects of literature, he argues, depend ultimately for their effectiveness upon their mimetic nature: the great topoi only survive and continue because they express permanent human experiences and desires. But the key concept is that of "verisimilitude" which, even at the height of the most formal neo-classicism, was always considered the essential attribute of good literature, and always retained its etymological meaning of "resembling truth". Literature does not deal in literal truths but in fictional hypotheses which produce an echo in every bosom because they reproduce the patterns of human behaviour and external reality. They show how all such people would act or feel in such circumstances, and as archetypes, deepen our experiential knowledge of life.

The second half of the book practices what the first half preaches, in offering "transparent" criticism of a

number of Shakespeare's plays and a few poems. Nuttall's mimetic approach to Shakespeare is a sophisticated one which suggests that Shakespeare had a finer sense of history than he is normally credited with. His characters are true to life but in addition their behaviour is conditioned by the particular cultural and historical situations into which they were born.

Coriolanus behaves according to the pattern of an earlier Roman culture and society than that which produced the stoic Brutus: The Merchant of Venice and Othello deal in characters who reflect in their different ways the unique civilization of renaissance Venice; Prince Hal is shaped by the specific demands of royalty in his period. They are all particular local cases, yet they possess the "probability" which makes them universal. Nuttall's thesis, of course, is directed primarily towards the interpretation of Shakespeare's plays and comparable literary modes such as the epic or the realistic novel; but it applies equally, if in a more subtle and indirect way, to the non-dramatic kinds, such as the lyric or the symbolic novel whose material is still that of human experience. Literature, indeed, has an inbuilt tendency towards mimesis, since the words which are its medium can never be wholly stripped of their relationship to the external objects and actions which they denote. It is the most

intrinsically mimetic of all the arts, as music is the least, with painting and sculpture reaching out in both directions, from the highly mimetic art of a Vermeer or a Rembrandt at one end to the abstract painters at the other, who go nearer to pure formalism than literature ever can. Yet even here, the pleasures from line, colour, perspective, formal pattern and the rest, are only possible because our normal vision has first perceived and enjoyed them in the world outside. Abstraction follows from the concrete reality, it does not precede it; and in its dependence on our normal faculties all art is mimetic in some degree. Mimesis, as Aristotle saw, is among the deepest of human instincts, and our tendency to find faces in ink-blot or representation in abstract art is evidence of the fact. It demands superhuman, or inhuman strength of mind to repress it, and we ignore it at our peril.

Professor Nuttall has written an important book: he has articulated the doubts which many feel about the way criticism is going, and restored traditional truths in terms which are relevant to contemporary problems. Undoubtedly, formalist criticism over the last thirty years or so has been enormously stimulating to intelligent students of English, but a price has had to be paid. In its post-structuralist form in particular, it has encouraged irresponsibility, even arrogance, in face of the literary text, and shrouded criticism in a mystique which only the initiates can penetrate. In the absence of objective references, literature can be made to mean whatever you want it to, and the critic can see himself as the only true creator.

By insisting on the relationship between literature and life and rehabilitating the test of probability which is implicit in mimesis, Nuttall has removed literature from the study and historical situations into which they were born. Coriolanus behaves according to the pattern of an earlier Roman culture and society than that which produced the stoic Brutus: The Merchant of Venice and Othello deal in characters who reflect in their different ways the unique civilization of renaissance Venice; Prince Hal is shaped by the specific demands of royalty in his period. They are all particular local cases, yet they possess the "probability" which makes them universal. Nuttall's thesis, of course, is directed primarily towards the interpretation of Shakespeare's plays and comparable literary modes such as the epic or the realistic novel; but it applies equally, if in a more subtle and indirect way, to the non-dramatic kinds, such as the lyric or the symbolic novel whose material is still that of human experience. Literature, indeed, has an inbuilt tendency towards mimesis, since the words which are its medium can never be wholly stripped of their relationship to the external objects and actions which they denote. It is the most

On page 109 there is a misprint which, in its unintentional way, has almost the force of a Freudian slip. "Notice" says Nuttall, "that my account of this scene has been written in a bull-blooded transparent language". Presumably "bull-blooded" was the word intended, but the printed version suggests a pleasing vision of Professor Nuttall in the china-shop of academic criticism, tossing its glittering but brittle contents in all directions.

Maurice Evans was until recently professor of English at the University of Exeter.

BOOKS
The chief villain

Nikolai Bukharin: the last years
by Roy A. Medvedev
Norton, £4.95
ISBN 0 393 30110 9

With the launching of forced industrialization and the defeat of the Right opposition in 1929, Bukharin, an intellectual leader, was ejected from the centre of the Soviet political stage. But he continued to play a minor role with verve and effectiveness, first in 1930-34 as director of industrial research, and then in 1934-36 as editor of the daily newspaper *Izvestiya*. He briefly returned to the centre of the stage as chief villain in the last of the major political trials in March 1938. Enthusiastic meetings in every Soviet workplace demanded and then applauded the execution of the "traitor and fascist agent" whom Lenin had described as "the most valuable and important theoretician" and "the favourite of the entire party".

The unhappy final act of Bukharin's life, and the tragic last scene, have fascinated western historians, whose central preoccupation has been to determine Bukharin's attitude to Soviet developments in those years. Did he really believe that, in spite of all the Stalinist distortions, the Soviet Union was still advancing towards communism? Or was he an utterly disillusioned man, trying to convey the bitter truth about Stalin's Russia through hints and signals in his articles?

Lenin once wrote that there is no "thermometer" with which to measure the degree of sincerity of a political leader. All politicians envelop their pronouncements in a cloud of ideology, in which sincere conviction and hypocritical manipulation of their followers may both play their part. All politicians adapt their aims to what they believe to be the practical possibilities at their disposal. With the Bukharin of the 1930s the historian is faced with particularly intractable information. In these last years of his life, all publications were of course strictly controlled, and all Bukharin's words and actions were scrutinized particularly carefully by the orthodoxy for the slightest sign of deviation. The open-



Nikolai Bukharin

heated and sometimes tactless Bukharin of the years before 1930 now had to curb his own tongue and keep his own counsel.

In spite of these difficulties, Roy Medvedev makes a useful contribution to our understanding of Bukharin's last years. Medvedev tentatively postpones consideration of this question for another occasion.

Prepared in difficult conditions in Moscow, this book should have been better edited in the west. The meeting which condemned Bukharin in January 1929 was not a plenary session of the central committee; Stalin's speech at this meeting was published not in the second but in the eleventh volume of his collected works; and so on. The middle which is made of Lenin's famous comments on Bukharin in 1922 deserves some sort of prize. According to this book: Lenin was right when he wrote in his *Testament* that there was something scholastic in Bukharin and his opinions - Lenin himself probably never even made a serious study of dialectics.

This must be a garbled version of Lenin's statement about Bukharin. There is something scholastic in him (he never studied and, I think, never fully understood dialectics). Clearly this is an error in translation or in editing. Roy Medvedev would never make such a mistake.

Medvedev persuasively argues that Bukharin sincerely meant what he said in the main thrust, though not in the details, of his speech at the party congress in January 1934 - a passionate call for unity in face of the mortal danger of Japanese and German fascism. Medvedev accepts the evidence, displayed in Stephen Cohen's outstanding biography of Bukharin, that veiled criticism of Stalin's policies is sometimes expressed in Bukharin's articles. But he also warns that "it would be quite wrong to seek in his every address some special hidden meaning and carefully disguised opposition". Bukharin's statements in the trial of March 1938 are the crux of the

R. W. Davies

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Reforming dictator

Fascism from Above: the dictatorship of Primo de Rivera in Spain, 1923-1930
by Shlomo Ben-Ami
Oxford University Press, £22.50
ISBN 0 19 822596 2

In comparison with the flood of material on the Second Republic and the Civil War, and more recently on the Franco regime, research on Spain in the 1920s has remained meagre. There is plenty of scope, then, for a history of Primo de Rivera's dictatorship: not only the political system, but also the immensely important institutions of church and army, economic and social policies and ideology need further research.

Although the author argues convincingly that the dictatorship cannot be dismissed as a "parenthesis" in Spanish history, nor the dictator as a philandering buffoon, he does not demonstrate how the man and the regime can actually be analysed and the regime can be explained as fascist. Primo de Rivera seized power in September 1923 in a military coup more reminiscent of Spanish nineteenth-century *pronunciamientos* than of the more modern routes to power taken by Mussolini and later Hitler. There was no popular political mobilization on the lines of 1933 to help along the conquest of the state; on the contrary, a political following in the Patriotic Union was contrived long after, rather than before, the event, and Professor Ben-Ami himself admits that the unit was an agency for defining, not moulding, popular politics. The state regime was never dominated, or deluged by this halfhearted "par-

ty"; the army retained its traditional role even to the point of eventually forcing Primo's withdrawal from politics; socialist unions were not dissolved but co-opted.

Primo's regime was a military dictatorship which drew heavily on Spanish Catholic corporatist traditions for its theory of the state, but ultimately failed to convince or coerce employers and Catalan capitalists to firm allegiance. With scepticism and hostility among these groups and in the army by the late 1920s, the dictatorship lacked any firm sociological or institutional base, and collapsed. As the author points out, its military origins, Catholic rhetoric and corporatist aspirations provide illuminating points of comparison with the early stages of Franco's dictatorship. But the analytical framework of fascism is intrusive and unhelpful.

Much more successful is the argument that the regime was innovative in many important ways, trying to create a "new state" rather than to preserve the social and economic privileges of the Spanish propertied classes. Particularly lucid is the discussion of the radical law reforms put forward by Calvo Sotelo, the quasi-Keynesian economic policies adopted, and the attempt to extend wage-fixing committees of employers and employees from industry to the hitherto entirely unreformed agrarian sector.

The regime emerges as neither fascist nor merely a conservative military autocracy, but a random yet sometimes courageously reforming dictatorship that came to grief by eroding its own power base.

Frances Lannon

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Maturing parties

The Transformation of Political Culture: Massachusetts parties, 1790s-1840s
by Ronald P. Formisano
Oxford University Press, £29.00
ISBN 0 19 503124 5

It is unusual to find a book on American state politics which begins by citing, among others, political developments in nineteenth-century Norway and New South Wales. But Ronald Formisano addresses a broader problem than tracing the political history of Massachusetts in the early national period.

Mass politics and mass parties developed in countries on three continents during the nineteenth century, and many historians and political scientists have sought to analyse their growth. By studying Massachusetts in some detail, Formisano seeks to present a more subtle picture of political change than others have done and to place the state's experience in comparative perspective.

American political historians have learnt a great deal from political scientists. Formisano himself has been one of the pioneers in applying rigorous methods of statistical analysis to past election returns, and the result has been to overturn many conventional notions of American political development. Another result, though, has been to leave studies of electoral history, institutional party development, political ideology, and public policy all imperfectly integrated. This is Formisano's first major attempt to put things back together. Massachusetts in the early nineteenth century was one of the largest American states and notable both for its own well-established political traditions and its burgeoning industrial economy. By setting the history of parties against this rich background of political culture and long-term social development, he provides a useful model of party growth.

Although he focuses on the increasing institutional maturity of parties, he moves away from the celebratory political science tradition which depicts party formation as the sole and sudden means of creating modern mass politics. The maturing of parties was a slow process, and despite considerable institutional innovation in the first two decades of the century, Formisano argues that parties did not become "entrenched institutions" until the 1840s. He is also careful to relate party

development to external factors. He sees a sharp increase in popular political consciousness in the 1820s and early 1830s in response to improved communications and the issues raised by economic development, but he sees this as a necessary precondition for true party development rather than as a consequence of party formation. Nor were independent popular perceptions entirely channelled into and supported by the party contest. Periodic movements of popular protest arose, and Formisano sees their role as vital. "In the nineteenth century, anti-party populism did much to reinvigorate and sustain democracy, more than did organized mass political parties." According to Formisano's argument, the creation and success of parties can only be understood within a broader and to some degree autonomous political culture.

If anything, he can be criticized for failing to take this argument further. By taking an internal functional definition of the maturing of political parties Formisano does not devote much attention to what parties could and were expected to accomplish beyond winning elections. He offers only a sketchy consideration of public policy, of what political contexts actually decided, but it is clear that the contours of policy were fixed before local party competition developed. Electoral (loyalties (at least in geographical terms) also solidified early and seem to have been little affected by party development or economic change. Finally, Formisano himself notes that the mature parties engaged in "almost ritualized warfare". In the period of the first political competition (when, Formisano argues, parties were not entrenched), people cared enough about the contest literally to kill in it; later on the competition seems to have become more and more of a game.

Formisano's own analysis suggests that parties became institutionalized and accepted only when they ceased to raise real and touchy issues. The political scientist with his concentration on the formal business of politicking could profitably learn from the historian's broader conception of politics. Beyond parties, electioneering, and voting it is necessary to consider people's expectations about government, the changing line they drew between public and private, and their fundamental ideas about the distribution of wealth and power.

The work has not yet been done, but there is a likelihood that parties grew as, and in part because, the sphere of formal politics declined.

Mark Kaplanoff

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Edited by KEITH THURLEY and STEPHEN WOOD

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BOOKS

Latent theories

Authenticity and Learning: Nietzsche's educational philosophy
by David E. Cooper
Routledge & Kegan Paul, £11.95
ISBN 0 7100 9552 X
Nietzsche in German Politics and Society, 1890-1918
by R. Hinton Thomas
Manchester University Press, £16.50
ISBN 0 7190 9332 2

For Nietzsche, no less than for Plato and Rousseau, philosophy is centrally concerned with education. The philosophical self must not only be liberated from stultifying conventional opinions, it must be educated to new possibilities.

But if philosophy is in important measure about education, Nietzsche must (so one supposes) at least implicitly if not explicitly make available a philosophy of education. David E. Cooper's intention is to tease out a latent theory of education from Nietzsche's philosophy, with the help of some suggestions from Heidegger's work.

Cooper suggests that the key to Nietzsche's educational philosophy is "the concept of authenticity." There are abundant problems with this notion, as Cooper is well aware. He begins by taking care to repudiate a couple of the ridiculous views commonly associated with the idea of authenticity. He then reconstructs a more satisfactory conception, interpreting Nietzsche in the light of Heidegger's discussion of authenticity in *Being and Time*.

Cooper draws freely upon the whole gamut of contemporary philosophy, from H.-G. Gadamer, Jürgen Habermas, and Michel Foucault to Donald

Davidson, W. V. Quine, and Hilary Putnam. There are illuminating digressions on "technicism", liberal education, and other important subjects. Some of the exposition of Nietzsche is acute; the chapter on Nietzsche's epistemology is particularly helpful. But we are not really offered more than snippets of Nietzsche's views about education proper (as opposed to extrapolations from his views about knowledge and morality), and the suspicion arises that a distinctive Nietzschean teaching on the nature of education is, at best, rather elusive. Whether the idea of the authentic individual should be the defining term of such a philosophy of education is, in any case, even more dubious.

What Cooper means by authenticity is not the liberation of whim and subjectivity, nor the discovery of one's "true" self, but something more like the capacity to rethink and re-evaluate one's attitudes to one's life and purposes within a concrete and bounded situation. An example of this would be the insight gained by the hero in André Gide's novel *The Immoralist* that the dedication to the life of scholarship that had been his pride, that indeed had been his whole life, "now seemed to me to have a mere accidental and conventional connection with myself. I found out that I was something different... that I had a separate existence of my own." Properly construed, the idea of authenticity is meant to place Nietzsche within the "aesthetic education" tradition of Schiller and Goethe.

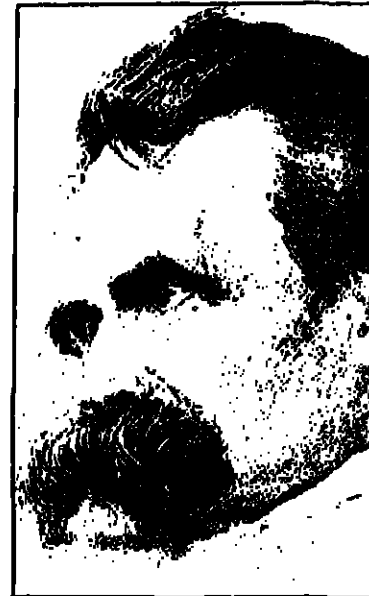
Despite Cooper's efforts to give a non-subjectivist sense to the idea of authenticity, I believe that a reading of Nietzsche is too much coloured by the early Heidegger, and that the object of Nietzsche's educational policy (as sketched in his writings of the 1870s) had more to do with the fostering of a sound public culture than with the cultivation of authentic individuals. Nietzsche did not wish to loosen or relax the imposition and enforcement of cultural norms; on the contrary, he wanted to render them more effective in resisting the centrifugal tendencies of modernity.

In his famous essay on historiography, for instance, the concern is not

with opening up horizons so that individuals could freely re-evaluate their self-understanding, but rather with erecting more durable horizons that would prove less vulnerable to nihilistic fragmentation. In fact, it was one of his main charges against the historical culture of the nineteenth century (and the proof of its nihilism) that it gave us too much insight into our situation, and thereby rendered impossible such horizons of action and purpose. The more we reflect on who we are and where we are headed, the less able we are to act. That is why Nietzsche is fearful of an education that is overly obsessed with the acquisition of knowledge.

Cooper proves quite resourceful in reconciling seeming contradictions in the position he ascribes to Nietzsche, but difficulties remain. For one thing, Cooper gives a very clear account of Nietzsche's genealogical critique of the idea of the moral subject, but he omits to explain how this is compatible with the possibility of living a life that is "truly one's own", implicit in the ideal of authenticity. A related problem arises over Nietzsche's notion of the need for masks. Cooper says on several occasions that the authentic self will be able to shed the masks it must (regrettably) wear in society. However, it is a simplification of the problem of self-knowledge, as Nietzsche sees it, to think that one will ever be in a position to discard one's masks, even in one's own presence, as it were. This, too, casts a question mark over the suitability of the concept of authenticity for interpreting Nietzsche.

For anyone who has read the work of Nietzsche, it should be plain that his writings offered no comfort to nationalists, antisemites, and other reactionaries in Wilhelmian Germany. It is not entirely surprising, therefore, that some German reactionaries actually gained awareness of this. To demonstrate this fact is the main burden of Professor Hinton Thomas's



Nietzsche by Hans Olde, 1899

book: "to get the record straight", as he says. It may be somewhat more surprising that Nietzsche's writings were embraced by certain socialists, anarchists, and feminists of the time, for Nietzsche was no less scathing about those ideologies. However, does it really matter how much whether passages in Nietzsche's work were exploited more by ideologies of the right or ideologies of the left? Surely, a thinker who exalts the value of perspectivism will be ripe for citation out of context from all sorts of points of view, both left and right. What Professor Thomas conspicuously fails to do is to offer any account of Nietzsche's thought that would transcend ideologies altogether.

Ronald Beiner

Ronald Beiner is lecturer in politics at the University of Southampton.

Roads to freedom

Marx's Ethics of Freedom
by George G. Brenkert
Routledge & Kegan Paul, £14.95
ISBN 0 7100 9461 2

Did Marx have a moral theory? It is easy to show that there are values and commitments implicit in his theories of history, capitalism and revolution and in his views about human nature and communist possibility. The passion with which Marx denounced contemporary conditions in Europe, the ferocity of his revolutionism, and his insistence that an adequate understanding of the world involved a radical determination to change it make it impossible to give any positivistic interpretation of his occasional pretensions to the status of "scientist".

It is tempting to say, therefore, that Marx's writings conceal an implicit moral theory that can be drawn out, reconstructed, and then compared and contrasted with the more explicit work of other great moral philosophers. This appears to be the thesis of George Brenkert's book.

Brenkert claims that a careful reading of Marx's work reveals that he did hold a moral theory in the sense of "an (essentially) consistent body of ethical judgments" derived "in a more or less conscious way from a common foundation." That seems a plausible claim, but we need to bear in mind the substantive view, Marx depicted moral philosophers and he would certainly not have counted himself among their number. He returned deliberately from setting out any explicit view on the nature of value, the good for man, and the possibility of ethical knowledge. Arguably, we betray the radical nature of Marx's enterprise by seeking to locate him in a philosophical tradition which he rejected.

The foundation of Marx's ethics, Brenkert claims, is a certain conception of freedom. This conception differs in two ways from what Brenkert calls "the bourgeois view of freedom." First, the familiar point that freedom for Marx means more than absence of external compulsion; it involves the possibility of positive self-determination and fulfillment in the life of a community. Secondly, it has a different, normative force from the bourgeois notion. Marxian freedom is not a higher principle on the basis of which the freedom of the individual is defined, but a principle which defines the freedom of the individual.

The last of these points, however, raises a much deeper issue. If Marx believed that some values (like distributive justice) were relative, was he committed to relativism generally in ethics? Is this the implication of his view that moral ideas were superstructural and that they operated to bolster the prevailing mode of production? The very possibility of critical social theory is at stake here; for if our consciousness is conditioned by social and economic structures, how can we base any valid criticism on the values and commitments that we find ourselves with? This is a knotty problem. It would be surprising if it could be unravelled in the scope of fifty pages; and the first part of Brenkert's book gives us no surprises in this regard.

The abiding impression is the misleading I began with: that the radical nature of Marx's thought has to be underestimated in order to squeeze him into the role of moral philosopher. *Marx's Ethics of Freedom* is a book that Brenkert wants him to play.

Jeremy Waldron

Jeremy Waldron is lecturer in political theory at the University of Edinburgh.

Maverick thinkers

Sophists, Socratics and Cynics
by H. D. Rankin
Croom Helm, £17.95
ISBN 0 7099 2223 X

The Sophists, professional teachers and maverick intellectuals of the fifth-century Greek "enlightenment", have commonly been treated as a phenomenon unique to their time, whose enduring contribution to human thought was absorbed and wholly superseded by Plato and Aristotle. They have been alternately damned (on Plato's authority) for their verbal chicanery and moral opportunism, and applauded for the independence of their challenging dedication to reason and argument. Some scholars find in Socrates and his disciples the first philosophers, others only rhetorical tricksters devoted to persuasion rather than truth, stumbling occasionally on philosophically fruitful insights largely by accident.

The present book is not unique in trying to assess the character of their work and its role in its own time, though it goes farther than most in tracing their influences outside pure philosophy: it is particularly interesting on Thucydides. Its unusual feature is its pursuit of sophistic ideas through Socrates and his disciples into the philosophical traditions of the neo-Cynics, and particularly among the Cynics. This endeavour is to be welcomed, as is its consequences that Plato is presented not as a timeless philosophical intellect, but as a man of his times, deeply involved in the controversies of his day and influenced by the work of his predecessors and contemporaries, even those of which he most vigorously disapproved.

The project, then, is admirable and modestly original; but, its realization is sadly wanting. It is far from clear what audience the author has in mind, or what purpose he expects his work to serve. It cannot be used as a source-book or as a guide to the ancient evidence: it is too brief and selective in its quotations to fill the former role, too vague and sparing in its references (occasionally absurdly misprinted) to be much use in the latter. It will hardly do, either, as an introductory study for philosophical beginners, because of its over-simplifications and *paraphrase* style, it conspicuously discusses its subject in particularly metaphysical and logical terms. In ways incomprehensible to the uninitiated, Unexplained allusions to ancient ideas and modern controversies abound. At the same time, more expert students of Greek philosophy will find it equally unhelpful. Too often its analyses stop short - perhaps out of an exaggerated respect for the gaps in our evidence - just where they begin to be interesting, where they are more frequently seen to wobble precariously between the banal and the nonsensical.

Guthrie's work on the Sophists is well known: more recently George Kerferd's book on the same subject has added significantly to our understanding, and pointed the way towards further research. A book of the same calibre, pursuing the same themes into the next century, would have been received with gratitude. But reflection of the work of his predecessors, and too cautious to add (or even subtract) anything of significance: his later ones report, but do little to illuminate, some strands in the tangled skein of fourth-century debate.

"The groups discussed in the course of this book", he remarks at the beginning of his concluding chapter, "placed the reasoning, arguing intellect at the centre of affairs." One would wish that the book's author had done the same.

Andrew Barker

Andrew Barker is lecturer in philosophy at the University of Warwick.

The Spirit of Modern Philosophy is a collection of 13 lectures by the American philosopher Josiah Royce first published in 1892 and now reprinted by Dover/Constable at £8.10. Contemporary and colleague of William James and Charles Peirce, Royce is regarded as America's outstanding representative of the classic tradition of philosophical idealism.

BOOKS

Quest for order

The Creation Controversy: science or scripture in the schools
by Dorothy Nelkin
Norton, £12.50
ISBN 0 393 01635 8

In recent years, organized opposition to evolution in America has grown to the point where today it constitutes a significant threat to orthodox science. The first stirrings of this revival of anti-evolutionary feeling occurred in 1969, when protestors persuaded the California State Board of Education to issue new guidelines recommending the inclusion of the Genesis account of creation alongside evolution in public school biology classes.

This spectacular (though short-lived) success paved the way for subsequent campaigns aimed at local school boards, textbook publishers, and state and federal agencies concerned with public education; and by 1982, the centenary of Charles Darwin's death, many states were either considering or had actually passed laws requiring "balanced treatment" of creation and evolution in public school and college curricula.

The rising tide of opposition to evolution caught the American scientific community unawares. To begin with, many biologists merely laughed at what they took to be space-age superstition, and one or two were even incautious enough to debate publicly with leading creationists without proper preparation (the result, predictably enough, was that they "lost"). During the past two or three years, however, things have begun to change.

In 1980, a new journal called *Creation/Evolution* was founded to rebut and refute creationist arguments; and at about the same time a network of "committees of correspondence" was set up to try to win public support for evolution. When the state of Arkansas passed a "balanced treatment" act in 1981, it found itself being to defend so-called "scientific creationism" in court against a well-organized and philosophically sophisticated team of scientists, philosophers and theologians. This time, it was the creationists rather than the evolutionists who lost the argument.

Since the Arkansas trial there has appeared a steady stream of books devoted to the (relatively easy) task of demolishing the creationist position. What has been lacking, however, has been an analysis of the historical and social context of the conflict itself. Happily, this gap has now been filled by Dorothy Nelkin, whose book *The Creation Controversy* is more concerned to comprehend latter-day anti-evolutionism as a cultural phenomenon than it is to combat it as an intellectual force. Nelkin is well qualified for this task, having previously undertaken detailed studies of public controversies over issues such as the siting of airports and the construction of nuclear power stations, and she brings to her analysis a welcome sensitivity to the complexities of the relationship between science and society.

At the outset, she notes the coincidence of the revival of anti-evolutionism with a much wider range of criticisms of science during the late 1960s and early 1970s. In debates over genetics, medicine, and civil and military technologies, the call was for more "socially responsible" science. However, while much of the most vocal protest came from the political left, the anti-evolutionists were being voiced more quietly by those whose ideological inclinations were closer to the "moderate majority" than those to the "radical left". In the late 1970s, "scientific creationism" articulated the concerns of large numbers of conservative Americans who did not wish to see their traditional values overturned by the secularism and liberal claims of modern science.

The *Creation Controversy* charts the course of the conflict unerringly. After a brief survey of earlier periods of anti-evolutionism, the author discusses the early twentieth-century movement known as the Young Earth Creationists, the roots of the current movement in fundamentalist Christianity, and the American classroom scene of the 1960s and 1970s.

So progress to save the redwoods was slow. Although some state parks were set up, what the club wanted was a federal National Park, of the same standing as Yellowstone and Yosemite. The league was content to seek cooperation and to accept compromise, if by so doing they could get small

very first time. The reaction that followed is traced through the leadership of ecologist opinion and its extraordinary efforts to set up an alternative scientific of origins, through the tortuous political tangles of a movement inevitably at odds with an American constitution based squarely on the separation of church and state, and through a number of particular disputes including the recent trial at Little Rock, Arkansas (where, incidentally, Nelkin was a witness for the prosecution). The book concludes with discussions of the effectiveness of creationist tactics, of the social sources of the conflict, and of the lessons that can be learnt from it.

There is much here that is of value. Historians will reflect on the analysis of the fundamentalist revival of the early 1970s; biologists will ponder on the table which reveals the strong tendency of creation scientists to have been trained in applied physical sciences and engineering; educationists will dwell on the list of changes in biology textbooks that were recommended by

the California Board of Education as an alternative to so-called "balanced treatment"; and anyone with a concern for liberty will be inclined to wonder how a political movement can succeed in having religious dogma encoded in law - and this in the name of "fairness". In the hands of the creationists, the plea for social responsibility in science has been turned into the plea for social subservience in science to the prejudices of a sectarian minority.

If there is a shortcoming in the book, it is perhaps in its handling of the social sources of the dispute. Here, at what is undoubtedly the most difficult point of all, one is left wondering why evolution (rather than, say, astronomy or psychology) is the particular object of so much ideological interest. Neither religion in general nor fundamentalism in particular are sufficient explanations, since most religious people have no trouble with evolution, and fundamentalism is at odds with far more than simply biological theories of the origin of species. It is simply that evolution is the most widely known of

the many heresies of modern science, or can it be that there is something particularly offensive to conservative evangelical protestants? If, as Nelkin concludes, creationism is a response to the "quest for order and authority in a society increasingly influenced by the censors of the right", it would be helpful to know why the axe falls as when it does. At least we should then know when to hide.

In 1977 Dorothy Nelkin wrote a preliminary essay on modern anti-evolutionism entitled *Science Textbook Controversies and the Politics of Equal Time* (MIT Press). That book, published before most academics in either America or Britain thought the subject of any real importance, was not widely noticed. *The Creation Controversy* deserves a better fate.

John Durant

John Durant is staff tutor in biological sciences in the department for external studies at the University of Oxford.

Save the redwoods

The Fight to Save the Redwoods: a history of environmental reform, 1917-1978
by Susan R. Schrepfer
University of Wisconsin Press, £19.20
ISBN 0 299 08850 2

"If you have seen one redwood, you have seen them all." The words are attributed to Ronald Reagan, when he was governor of California. Although Mr Reagan denied having used these words, they are an apt summary of his attitude, as governor, to the proposal to have a Redwood National Park.

One of the many natural heritages bestowed upon California were its redwood forests, groves over a thousand years old with trees over 300 feet high and over 16 feet in diameter. All that remains of them are strips of forest, some of it preserved as parks, from north of San Francisco toward the Oregon border. The rest has been destroyed by timber companies. Eroded gullies, tons of topsoil carried down creeks in heavy rain: these are the record of Californian pillage.

The splendour of these forests has been known for a long time. Over a century ago, Walt Whitman wrote a poem about "the music of the choppers' axe" felling the redwoods he had seen on a visit into Humboldt county. Although the felling is still going on, about 4 per cent of the original two million acres has been rescued from the timber companies. Susan Schrepfer's book tells, in great detail, the story of that rescue.

It began when seven men - four professors, a New York politician, a Californian oil magnate, and an official in the Park Service, met in a San Francisco hotel in 1919 and decided to establish a Save-the-Redwoods league. The idea quickly took root. Membership of the league was eminently respectable and affluent. Its aim was not to protest or even to seek public money to purchase tracts of forest; it was to raise the cash from its own membership. Citizens were driven along the Redwood Highway and asked to "select and name a memorial grove for family or friend". The league's policy was to seek cooperation, not conflict, with the timber companies.

The league was not the only body concerned with conservation in California. As long ago as 1892 the Sierra Club was founded to foster outdoor recreation and to defend the Sierra Nevada from over-exploitation. The club, too, had influential members who could raise private funds, and in public money to purchase tracts of forest; it was to raise the cash from its own membership. Citizens were driven along the Redwood Highway and asked to "select and name a memorial grove for family or friend". The league's policy was to seek cooperation, not conflict, with the timber companies.

So progress to save the redwoods was slow. Although some state parks were set up, what the club wanted was a federal National Park, of the same standing as Yellowstone and Yosemite. The league was content to seek cooperation and to accept compromise, if by so doing they could get small



Klondike miners, a picture from *Discover Gold* by Geoffrey Hindley (Orbis, £15.00).

"museum-like" parks scattered about the countryside. The club wanted massive federal action to create, in the face of opposition not only from industry but even from the state legislature, a large wilderness "of ecological diversity".

Although this difference in aims weakened the alliance between the league and the club, it was a difference in means that finally broke the alliance. The club became militant, uncompromising, shrill in its criticism of the timber industry. And when, in 1965, years of lobbying had opened the doors at Washington wide enough for the proposal for a Redwood National Park to be put on the agenda, the case for the park was put at risk because the league advocated one site, and the club advocated another, quite different, site. This gave the opponents of any national park the opportunity to play off one conservation group against the other. By this time the publicity of the Sierra Club had aroused the conscience of Americans all over the nation. "Save the redwoods", like "save the whales" and "ban the bomb", became an emotive issue, and a political one, too, with democrats and republicans lining up against each other. Reagan, then governor of California, backed the timber industry, and this only underlined the need for the federal government to intervene.

Under its militant leadership and intensive lobbying, the Sierra Club managed, by the mid-1960s, to get a bill introduced in Congress for a Redwood National Park to be financed largely from Washington. The bill was signed by President Johnson on October 2, 1968. Though better than nothing, it bore the scars of the conflict of will between the league and the club, and it ignored the league's advice - to include complete

watersheds in the park - and the club's advice - to ensure enough land to create a real wilderness with ecological diversity.

There matters rested for a while. The Sierra Club lost some of its influence because its militant leader ran the club into debt through his extravagant advertising and propaganda, and he was obliged to resign (he then went on to galvanize the American Friends of the Earth). Meanwhile the timber industry continued to fall the redwoods, right up to the frontiers of the park, thus endangering the park itself. The league and the club both pressed for some restraint to be applied to the felling of trees still in private hands.

Voluntary restraint, however, proved impracticable, and by the early 1970s there was pressure to enlarge the National Park by acquisition of more forest. The timber industry formed an alliance with the trade unions to oppose this; it would mean the loss of up to 2,000 jobs in one county alone. The league once more came into its own, raising over a million dollars to buy bits of forest back and undertaking to continue this size of subsidy. But this, of course, was not enough. And in the end a second bill had to be passed by Congress to save the endangered park created ten years earlier.

This bare summary gives no impression of the vivid account Susan Schrepfer has written. From official papers, files, and interviews she has produced a story as compelling as a journalist's account of a battle, ending breathlessly at the House of Representatives in Washington on February 9, 1978 - when the second bill was passed.

Eric Ashby

Eric Ashby is a fellow of Clare College, Cambridge.

A range of flows

Rivers: form and process in alluvial channels
by Keith Richards
Methuen, £16.00 and £8.50
ISBN 0 416 74900 3 and 749100

Before the 1950s fluvial geomorphology was predominantly concerned with landform development and the evolution of river systems. W. M. Davis was the original proponent of this approach of inferring the operation of erosional and depositional processes. Research in the United States during the 1950s into the processes controlling flow in alluvial channels questioned many of the assumptions in the Davis-based models and focused attention on the study of landforms in equilibrium.

Much of this pioneering research into form and process in alluvial channels was reviewed in 1964 in Leopold, Wolman and Miller's classic *Fluvial Processes in Geomorphology* which became a standard reference for teachers and an inspiration for a generation of research students and undergraduates. The exponential growth in research which was stimulated by this book has generated the demand for an up-to-date text on geomorphology. *Rivers* attempts to provide for it.

Much debate in recent years has centred on the role of time in fluvial geomorphology. Over short and intermediate timescales, up to 100 years, many landforms can be regarded as being in equilibrium with the operative processes, and causal relations can therefore be established. These concepts are fully discussed in an introductory chapter, in which the controls on stable channel dimensions are also identified. Factors affecting the major controls, streamflow and sediment supply, are considered in the subsequent chapter on the drainage basin. This is rather a discursive treatment and the justification for such a chapter is not well made.

The hydraulic and sediment transport processes responsible for alluvial channel development are reviewed in two chapters. Boundary layer theory is introduced in a standard way to verify empirical flow resistance equations, while stream power or critical tractive force concepts are shown to be incorporated in many transport equations. Although all rivers adjust in response to a range of flows, it has been suggested that a single steady discharge could produce the same shapes and dimensions. This concept is considered in a chapter on the magnitude and frequency of channel-forming events. Unfortunately, an otherwise excellent chapter is marred by lengthy coverage of techniques for discharge measurement and flood frequency analysis - subjects already well covered by existing hydrological texts.

Considerable empirical evidence to show how the cross section, slope and plan shape of alluvial channels are controlled by flow and sedimentary conditions is presented in three core chapters. Many of the relations are substantially explained in terms of current knowledge of flow processes.

Although most of the book is concerned with stable channel conditions, a short chapter considers river channel changes, both natural and man-induced. Here the author identifies a variety of mechanisms that trigger instability (for example, reservoir construction and land use changes) and discusses the general responses of the channel to such changes, but he makes no reference to recent advances in the mathematical modelling techniques that enable changes in channel depth and slope to be predicted.

Clearly better knowledge of natural channel processes and the factors affecting regime channel dimensions is a prerequisite for improved river engineering design methods. The application of such knowledge is briefly considered in a final chapter, the author making an excellent case for a greater geomorphological contribution to river engineering.

This lucid and scholarly review of over 850 research publications will undoubtedly serve as an excellent advanced text for geomorphology courses and as a standard reference work for students in allied subjects.

Richard Hey

Richard Hey is a lecturer in environmental sciences at the University of East Anglia.

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MICHAEL G. DYER

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RESEARCH FELLOW GRADE 1 IN FLUID DYNAMICS
Department of Mathematics
A research fellow grade 1 in fluid dynamics. The successful candidate will be responsible for research and publication in the field of fluid dynamics. The post holder will be expected to contribute to the development of the Department of Mathematics.

TENURABLE LECTURESHIP IN SOCIAL AND POLITICAL THEORY (Ref: 0442)
School of Social Inquiry
The position will be filled in the area of Social and Political Theory. The successful candidate will be responsible for teaching and supervising students in the field of Social and Political Theory. The post holder will also be responsible for research and publication in the field of Social and Political Theory. The post holder will be expected to contribute to the development of the School of Social Inquiry.

RESEARCH FELLOW GRADE 2 IN PHYSICAL OCEANOGRAPHY
Department of Mathematics
A research fellow grade 2 in physical oceanography. The successful candidate will be responsible for research and publication in the field of physical oceanography. The post holder will be expected to contribute to the development of the Department of Mathematics.

RESEARCH FELLOW GRADE 3 IN PHYSICAL OCEANOGRAPHY
Department of Mathematics
A research fellow grade 3 in physical oceanography. The successful candidate will be responsible for research and publication in the field of physical oceanography. The post holder will be expected to contribute to the development of the Department of Mathematics.

TENURABLE LECTURESHIP IN COMMUNICATION STUDIES (Ref: 0813)
School of Human Communication
The position will be filled in the area of either English or Social Science. The successful candidate will be responsible for teaching and supervising students in the field of communication studies. The post holder will also be responsible for research and publication in the field of communication studies. The post holder will be expected to contribute to the development of the School of Human Communication.

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The Open University Faculty of Mathematics Computing Discipline Two Lectureships in Computing

Applications are invited for the following posts in the computing discipline of the Faculty of Mathematics:

Post 4586: Lectureship in Computing (permanent post)
Post 4608: Lectureship in Computing (five year post)

The posts have been established in response to major new developments in computing at the Open University, particularly at the postgraduate level.

Applicants for the permanent lectureship should have appropriate experience and qualifications in any area of non-numerical computing. Research and previous teaching or industrial experience will be an advantage. The person appointed will be involved in course production at all levels.

The successful applicant for the temporary lectureship will work on the SERC-funded postgraduate course 'Industrial Applications of Computers'. He/she should possess appropriate research, industrial or teaching experience.

Appointment to the lectureship will be made on the Lecturer salary scale (£7,180-£14,125), starting salary will be at a point appropriate to age and experience.

The lectureships are available immediately. Applicants should state clearly for which post they are applying.

Application forms and further particulars are available from Mr R. L. Johnson (C2), Assistant Secretary (Maths), Faculty of Mathematics, The Open University, Walton Hall, Milton Keynes MK7 6AA, or telephone Milton Keynes (0908) 653784; there is a 24 hour answering service on 653888.

Closing date for applications: 20th January 1984.

University of Strathclyde Bursar

Applications are invited for the post of Bursar of the University of Strathclyde. The successful candidate will be responsible for the financial management of the University. The post holder will be expected to contribute to the development of the University.

Further particulars may be obtained from:
The Registrar, The University of Strathclyde,
McGowan Building, 16 Richmond Street,
Glasgow G1 1XD.

University of North Wales Coles Priory, Gogledd Cymru Bangor SECRETARY AND REGISTRAR

Applications are invited for the post of Secretary and Registrar. The successful candidate will be responsible for the administrative management of the University. The post holder will be expected to contribute to the development of the University.

Further particulars may be obtained from:
The Registrar, The University of North Wales,
Coles Priory, Gogledd Cymru Bangor.

THE QUEEN'S UNIVERSITY Belfast
STAFF TUTOR IN PHYSICAL EDUCATION
Applications are invited for the post of Staff Tutor in Physical Education. The successful candidate will be responsible for teaching and supervising students in the field of Physical Education. The post holder will also be responsible for research and publication in the field of Physical Education. The post holder will be expected to contribute to the development of the University.

University of Exeter Chair of Theological Studies

Applications are invited for the Chair of Theological Studies, tenable from 1st October, 1984 for a seven year term. Preference is likely to be given to a New Testament specialist. Salary on the agreed professorial range, current minimum £17,275 per annum.

Further particulars may be obtained from the Academic Registrar, University of Exeter, Ex4 4QJ. Closing date for receipt of applications 13th February, 1984.

FAIRLEIGH DICKINSON UNIVERSITY
Wroxton College
Applications are invited for the post of Lecturer in English Literature to commence 1st February, 1984, for an initial period of two years.

Candidates should be graduates with a higher degree and able to teach courses in 19th and 20th century literature. Further particulars may be obtained from the Academic Registrar, University of Exeter, Ex4 4QJ. Closing date for receipt of applications 13th February, 1984.

THE UNIVERSITY OF AUCKLAND
POSTDOCTORAL FELLOWSHIPS
Applications are invited for postdoctoral fellowships in the field of English Literature. The successful candidate will be responsible for research and publication in the field of English Literature. The post holder will be expected to contribute to the development of the University.

UNIVERSITY OF BRADFORD
LECTURESHIP
At the Project Planning Centre for Developing Countries.
The Project Planning Centre runs in Bradford and abroad, specialised post-graduate courses in project planning for personnel from developing countries. The successful candidate will be responsible for teaching and supervising students in the field of project planning. The post holder will also be responsible for research and publication in the field of project planning. The post holder will be expected to contribute to the development of the University.

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Universities continued

NEW CHAIRS OF COMPUTER SCIENCE, ENGINEERING SOFTWARE AND COMPUTER-AIDED ENGINEERING

Three new Chairs have been established by the University of Leeds in the related fields of Computer Science, Engineering Software and Computer-Aided Engineering. This initiative represents a commitment to broadly-based development in these fields, following a major restructuring exercise in the Faculty of Science and Engineering, and implies an expectation that those appointed will actively promote inter-departmental and inter-faculty collaboration whilst also developing their own interests. Applications are now invited for the Chairs which are to be located in the Department of Computer Studies, the Department of Electrical and Electronic Engineering and the Department of Mechanical Engineering respectively.

THE CHAIR OF COMPUTER SCIENCE IN THE DEPARTMENT OF COMPUTER STUDIES
Within the context of a strong contribution to the development of Computer Science, the successful applicant will be expected to take a particular interest in one or more of the following fields: the theory of computation (e.g. complexity theory or theory of algorithms), intelligent knowledge-based systems (KBS) (e.g. expert systems), or systems-based aspects of computing (e.g. computer architecture or VLSI).

THE CHAIR OF ENGINEERING SOFTWARE IN THE DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING
The successful applicant will have unusual experience in the design and development of software for engineering applications. The post holder will be expected to contribute to the development of the Department of Electrical and Electronic Engineering.

THE CHAIR OF COMPUTER-AIDED ENGINEERING IN THE DEPARTMENT OF MECHANICAL ENGINEERING
Applicants should preferably be Chartered Engineers and should have had substantial experience of, or regular working contacts with, industry in the application of computer techniques to geometric modelling, design and manufacture. The appointment to the Chair will be associated with four further appointments - to a Senior Lectureship and three Lectureships.

Further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT quoting reference number 4848/DO for the Chair of Computer Science, 6629/DO for the Chair of Engineering Software, 6627/DO for the Chair of Computer-Aided Engineering. The closing date for applications is 31 January 1984. Applicants from overseas may apply in the first instance by cable.

THE UNIVERSITY OF LEEDS
The University of Leeds is a leading research university. It is a member of the Association of Universities and Colleges in Britain. The University is committed to the highest standards of research and teaching. The University is a member of the Association of Universities and Colleges in Britain.

University of Otago
CHAIR OF MANAGEMENT
Applications are invited for the Chair of Management. The successful candidate will be responsible for teaching and supervising students in the field of Management. The post holder will also be responsible for research and publication in the field of Management. The post holder will be expected to contribute to the development of the University.

University of Hong Kong
CHAIR OF LAW
The University of Hong Kong is a leading research university. It is a member of the Association of Universities and Colleges in Britain. The University is committed to the highest standards of research and teaching. The University is a member of the Association of Universities and Colleges in Britain.

The University of Melbourne
LECTURESHIP IN RELATIONS (LIMITED TENURE)
Applications are invited for a limited tenure lectureship in the field of Relations. The successful candidate will be responsible for teaching and supervising students in the field of Relations. The post holder will also be responsible for research and publication in the field of Relations. The post holder will be expected to contribute to the development of the University.

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Griffith University
Brisbane, Australia
LECTURER (TWO POSITIONS)
1. ORGANIZATIONAL SYSTEMS
2. COMPUTING AND INFORMATION STUDIES

The University is developing an innovative, interdisciplinary approach to the study of organizational systems and computing and information studies. The successful candidate will be responsible for teaching and supervising students in the field of organizational systems and computing and information studies. The post holder will also be responsible for research and publication in the field of organizational systems and computing and information studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1104)

High academic qualifications in drama and theatre studies are required. The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1106)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1108)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1110)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1112)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1114)

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THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1116)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1118)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1120)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1122)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1124)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

The University of New South Wales
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1104)

High academic qualifications in drama and theatre studies are required. The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1106)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1108)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1110)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1112)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1114)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
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LECTURER (REF. 1116)

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THE UNIVERSITY OF NEW SOUTH WALES
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LECTURER (REF. 1118)

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THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1120)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1122)

The successful candidate will be responsible for teaching and supervising students in the field of drama and theatre studies. The post holder will also be responsible for research and publication in the field of drama and theatre studies. The post holder will be expected to contribute to the development of the University.

THE UNIVERSITY OF NEW SOUTH WALES
Sydney, Australia
THREE POSITIONS
LECTURER (REF. 1124)

